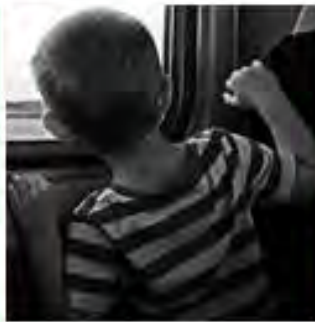




Northern New England Intercity Rail Initiative

BOSTON | SPRINGFIELD | NEW HAVEN | MONTREAL



STATION SITE ASSESSMENT & GUIDELINES

DATE: APRIL 2014





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1 INTRODUCTION

Passenger stations serve as the gateway for the traveling public to access rail services. Stations comprise functional elements that support arrival and departure of passengers that include platforms, station buildings, pickup and drop off areas, and intermodal connections. How each of these elements are designed and implemented has a significant impact on the passenger experience.

The development of criteria for station inclusion in NNEIRI service is an important activity of this report. Criteria were developed by identifying key characteristics that drive demand for intercity rail service, including existing site conditions, surrounding population density and commercial activity, intermodal connectivity, and appropriate distance between station stops. Many of the criteria are based on standards developed by AMTRAK and American Railway and Maintenance of Way Association (AREMA) and other local and national studies of rail stations.

The 470 mile NNEIRI Corridor will link diverse communities in Massachusetts, New Hampshire, Vermont, Quebec, and Connecticut. The initial list of stations considered for the NNEIRI study includes 29 potential station sites. The initial list was developed using all existing intercity rail stations on the Corridor, three future stations under development as part of the Knowledge Corridor project, and two proposed station sites.

This discussion of stations identifies the specific criteria for stations that is used for analysis in the NNEIRI study and includes analysis of individual stations and recommendations for future service and potential station upgrades.



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2 STATION SITE DESIGN

Stations are an integral part of the passenger experience and must be designed to meet identified station criteria.¹ The traveling public largely consists of business travelers and leisure travelers. Business travelers depend on reliability, seek to minimize wait time, and have a heavy usage on wireless devices. Business travelers also tend to be repeat customers and arrive at stations close to departure time.² Leisure travelers have a different profile, with greater emphasis on station wayfinding and high use of station amenities and retail facilities. Leisure travelers also tend to be two or more people traveling together and arrive at a station around an hour before departure, due primarily to unfamiliarity with the station and surrounding area.³ Thus, station standards must meet the needs of each distinct passenger group.

The development of station criteria resulted from the consideration of individual station criteria that are associated with existing intercity services. AMTRAK standards are used as a primary basis for assessing NNEIRI stations as this study will be considering improved intercity rail standards. Additionally, the Corridor will likely continue to host AMTRAK trains regardless of the operator of the NNEIRI service, meaning any station improvements will need to comply with AMTRAK operations requirements. Recently developed standards for AMTRAK's Cascades service in the Pacific Northwest were considered since they are the most recent comprehensive intercity corridor station design standards developed. Other standards considered are the Massachusetts Bay Transportation Authority (MBTA) and American Railway Engineering and Maintenance-of-Way Association (AREMA).

2.1 TYPES OF STATIONS

The location and number of stations along the Corridor will impact ridership and revenue as well as local community land uses. The Corridor traverses both urban and rural areas and includes stations with different passenger and community needs. Therefore, the design considerations for different station types will vary. Stations types include:

- **Urban Hub Stations** are located in major city centers, address significant demand for downtown services and businesses and provide access to intermodal connections, such as commuter rail, rapid transit, intercity and local bus, taxi, and airport connections. Urban Hub Stations are generally near service and maintenance facilities, connect with regional transit systems, and offer opportunities for urban development. Urban hub stations on the Corridor include Boston (South Station and Back Bay), Worcester (Union Station), Springfield (Union

¹ "Cascades Corridor Station Design Criteria." Washington State Department of Transportation and Jacobs Engineering. November 8, 2012. Page 6.

² Ibid.

³ Ibid.

Station), Montreal (Central Station), Hartford (Union Station), and New Haven (Union Station).

- **Urban Intermediate Stations** are located in smaller urban centers and provide access to regional connecting transit and highways. Examples of Urban Intermediate Stations on the Corridor include Northampton Station in Northampton, Massachusetts.
- **Suburban Hub Stations** are located near large highway and transit interchanges and provide regional access to outlying parts of metropolitan areas. These stations are typically located 10-20 miles from city centers and are usually close to major activity centers. In most cases, such stations are integrated or closely linked with an existing urban transit system and/or an urban highway. Target locations for Suburban Hub Stations will be in areas near existing major highways, such as Framingham Station, located near the major junction of Interstate 90 and Route 9.
- **Suburban or Rural Intermediate Station** are located in smaller towns or dense communities on the urban fringe. The station type typically supports additional development of the surrounding land, serve an existing community, and at times a tourist or recreational area. Target locations for Suburban or Rural Intermediate Stations on the Corridor include densely developed smaller communities, such as Waterbury, Vermont or Windsor, Connecticut.

2.2 STATION DESIGN CRITERIA

The passenger's first and last impressions of a rail journey are associated with passing through a station. Station design that provides a positive passenger experience and meets railroad operational needs is critical to ensuring successful NNEIRI service. Construction, renovation, maintenance, or other changes to stations should consider the station design criteria outlined in this document.

Generally, station design criteria are developed to assist with station design review and are primarily existing industry standards and are not intended to include all elements for actual station design. In the case of the NNEIRI study, the inclusion of Station Design Criteria is to help evaluate the type of amenities that should be included at NNEIRI stations. Since specific industry and government standards may change before NNEIRI implementation, the station design criteria should be viewed as data to support station identification and evaluation of potential improvements.

Station design criteria for the NNEIRI study include:

- **Quality Design and Architecture** – Many stations on the Corridor have unique and historic architecture, reflecting decades of New England history. Ensuring a tradition of quality design and architecture continues as paramount to passenger and community experience of NNEIRI service.
- **Historically Significant Structures** – Many stations on the Corridor are located in historically significant structures, requiring close attention to historic preservation standards and laws.
- **Sustainability** – Stations should be environmentally friendly and utilize an industry standard rating system, such as Leadership in Energy & Environmental Design (LEED), to determine

appropriate upgrades. Stations should also consider future impacts from climate change to station operations, including the impact of severe weather, by planning resilient infrastructure systems.

- Flexible Spaces – Buildings and facilities should be designed to adapt to changing technologies, security requirements, and passenger growth.⁴ Additionally, when possible, stations should be designed to not preclude expansion.⁵
- Site Furnishings – Stations should be equipped with appropriate furnishings to provide for passenger comfort. For example, exterior and interior benches will provide places for waiting passengers to sit.
- Platform Length, Clearances and other special requirements:
 - Stations must be long enough to accommodate at least one 85 foot long, 10 foot wide coach; however, AMTRAK generally prefers platforms that are the full length of trains where conditions allow.⁶
 - Individual access regulations for each state that guide platform dimensions and required access and emergency egress routes must be considered.
 - Newly constructed or renovated platforms are preferred to be at a height of 48” above top of rail (ATR), offset by 5’ 7” from center line of track on tangent sections. Existing platforms can be maintained at a height of 8” ATR, offset by 5’ 1” from center line of track on tangent sections.⁷
 - Station elements must also accommodate operating requirements for freight railroads.
 - AMTRAK recommends that “platforms served by AMTRAK that are located along a host railroad, the design standards of that host railroad should normally be followed. Any inconsistencies with AMTRAK’s standards should be brought to the attention of Amtrak and will be reconciled by AMTRAK, working with the host railroad.”⁸
 - Canopies should be considered for any stations with exposed platforms. Canopies should be “architecturally integrated into the station building design through the use of common fascia materials and color schemes.”⁹ Canopies are important for passenger and crew comfort, particularly given New England’s reputation for inclement weather.

⁴ “AREMA Manual for Railway Engineering.” American Railway Engineering and Maintenance-of-Way Association. 2004 Update, Page 14-6.3.

⁵ “AREMA Manual for Railway Engineering.” American Railway Engineering and Maintenance-of-Way Association. 2004 Update, Page 14-6.2.

⁶ “Intercity Rail Stations Served by Amtrak; An Updated on Accessibility and Compliance with the Americans with Disabilities Act of 1990.” AMTRAK, October 27, 2010, http://www.amtrak.com/ccurl/30/102/ADA_AccessibilityComplianceReport_Oct2010.pdf, Page Appendix 1.

⁷ “Intercity Rail Stations Served by Amtrak,” Page Appendix 1.

⁸ “Intercity Rail Stations Served by Amtrak,” Page Appendix 2.

⁹ “AREMA Manual for Railway Engineering.” American Railway Engineering and Maintenance-of-Way Association. 2004 Update, Page 14-6.3.

- In high-traffic stations, it is “desirable that baggage, mail, and express trucks shall not have to traverse or occupy platform space being used for the accommodation of passengers.”¹⁰ In lighter traffic stations where separate passenger and truck movements are more likely to occur, movements should be closely coordinated to not disrupt movements.”¹¹
- Where platform grade crossings are necessary, particularly for stations with low-level platforms, “they should be located for the convenience of the passengers, baggage handling, and commissary services.” Additionally, “care should be used in selecting crossing material for passenger use to avoid tripping hazards and problems with luggage carts.”¹²
- Lighting – Stations must be appropriately illuminated to provide safe passageway in dark interior spaces and exterior spaces at nighttime.
- Safety and Security – Stations must have sufficient security and life safety systems and have in place protocols to ensure the safety of passengers, crew, and property.¹³
- Technology – Stations must include electronic devices to inform passengers of train status. Larger stations should provide accommodation for ticket vending machines, public Wi-Fi, and other appropriate electronic equipment.¹⁴
- Wayfinding – Stations must include appropriate signage to direct passengers to services inside the station, onsite transportation functions, and surrounding sites. Wayfinding devices need to be designed for first-time visitors and infrequent travelers.
- Station Tracks – Tracks in a station should be “designed to accommodate the planned schedule of trains stopping at that station, trains passing through it, sections combining or splitting, special cars on or off, locomotive changes, delayed trains, special movements, and future increases in traffic.”¹⁵
- Waiting rooms and indoor facilities should be constructed at most Urban Hub and Urban Intermediate Stations. Waiting rooms, if used, should include:

¹⁰ “AREMA Manual for Railway Engineering.” American Railway Engineering and Maintenance-of-Way Association. 2004 Update, Page 14-6.4.

¹¹ “AREMA Manual for Railway Engineering.” American Railway Engineering and Maintenance-of-Way Association. 2004 Update, Page 14-6.5.

¹² “AREMA Manual for Railway Engineering.” American Railway Engineering and Maintenance-of-Way Association. 2004 Update, Page 14-6.6.

¹³ “AREMA Manual for Railway Engineering.” American Railway Engineering and Maintenance-of-Way Association. 2004 Update, Page 14-6.7.

¹⁴ “AREMA Manual for Railway Engineering.” American Railway Engineering and Maintenance-of-Way Association. 2004 Update, Page 14-6.3.

¹⁵ “AREMA Manual for Railway Engineering.” American Railway Engineering and Maintenance-of-Way Association. 2004 Update, Page 14-6.4.

- Restrooms must be provided in passenger waiting areas for Large, Medium, and Caretaker stations. While not required for Small stations, restrooms should be included when feasible.¹⁶
- Food and Drink Vending Machines should be provided.¹⁷
- Where appropriate, stations should include concessions, such as food vendors, restaurants, bars, and retail stores.¹⁸ When properly constructed and located, concessions in stations have proved profitable for the station operator.¹⁹ Concession stand construction should be site and context specific and will vary depending on space size and concessioner requirements.
- Ticketing area and related space even if it is not staffed full time.²⁰
- Information desk or kiosk, with train schedules material on local transportation options, hotels, business, and other traveler information. Information desks should be staffed in larger stations.
- Snow Removal – consideration should be given for snow removal operations, salt storage, and snow dumping areas.²¹
- Refuse – stations should include trash and dumpster locations for both public and concessioners needs.

2.3 STATION ACCESS CRITERIA

Passengers will access stations through various means, including private automobile, taxi, transit, bicycle, and walking. Proper station planning will ensure each mode is accommodated and transfers are seamless. Station access criteria that should be considered include:

- Private Automobile and Taxi Pick-up Facilities – Areas for private automobile, group ride, and taxi stands should be provided to facilitate easy passenger drop off and exit from stations. Easily identifiable taxi stands should be built in close proximity to the main station entrance. Where space is available and demand is present, cell-phone waiting lots, similar to airports, should be provided to alleviate crowding in short-term parking spaces for larger stations.
- Parking – At suburban or rural stations, a larger number of passengers will access stations by car and a significant number will require parking. Both daily and long-term parking should be

¹⁶ “Amtrak Station Program and Planning Guide.” Amtrak, May 2012.

¹⁷ “Amtrak Station Program and Planning Guide.” Amtrak, May 2012.

¹⁸ “Amtrak Station Program and Planning Guide.” Amtrak, May 2012.

¹⁹ “AREMA Manual for Railway Engineering.” American Railway Engineering and Maintenance-of-Way Association. 2004 Update, Page 14-6.7.

²⁰ “Amtrak Station Program and Planning Guide.” Amtrak, May 2012.

²¹ “AREMA Manual for Railway Engineering.” American Railway Engineering and Maintenance-of-Way Association. 2004 Update, Page 14-6.7.

provided at station sites. Ideally, parking should be integrated into a station complex with lighting and security systems.

- **Private Car Rentals and Car Sharing** – Urban Hub Stations on the Corridor could support extensive car rental and sharing facilities in the station vicinity. While such facilities are not appropriate for all locations, stations should at least have information on area car rental and sharing agencies.
- **Transit** – Urban Hub and Urban Intermediate Stations often have significant transit connections. Transit facilities in urban stations will include rapid transit stations incorporated directly into building structures and adjacent intercity and city bus stops. Stations in suburban locations will rely less heavily on transit connections but should incorporate covered bus stops and other improvements to facilitate transit usage onsite. Additionally, many facilities will feature connections regional commuter rail lines, where commuter trains will frequently use the same platform as NNEIRI service. Where possible, NNEIRI service should coordinate with local transit providers to allow for a single ticket for transfers and complementary schedules, particularly for commuter rail connections.
- **Pedestrian** – Urban Hub, Urban Intermediate, and Suburban Intermediate Stations will depend heavily on pedestrians. The level of expected pedestrian activity will depend on station area land use, such as a nearby college campus. Pedestrian access to a station should provide designated walkways, lighting, and security systems.
- **Bike and Bike Sharing** – Stations should be equipped with covered bicycle parking facilities. Bike parking should include lighting, security systems, and some protection from the elements to possibly include bike lockers. Stations should also consider bicycle sharing facilities where appropriate conditions exist.
- **Airport** – Stations in close proximity to major airports should coordinate ground connections. For example, South Station is in close proximity to Boston Logan International Airport, Windsor Locks is near Bradley International Airport, and Central Station-Montreal is in close proximity to Trudeau International Airport. Many airports serve as air hubs for a large geographic area and coordinated rail service could add an extra benefit for passengers.

3 REGULATIONS & INDUSTRY STANDARDS

Stations must comply with local, state, and federal codes and generally must adhere to industry norms. Construction, renovation, maintenance, or other changes to stations resulting from NNEIRI service implementation should pay heed to government codes and industry standards outlined in this document.

3.1 ADA ACCESSIBILITY

The Americans with Disabilities Act (ADA) of 1990 requires certain accommodations in public spaces for people with disabilities; statutory requirements are found at 42 USC § 12162(e) and the U.S. Department of Transportation's regulations found at 49 CFR Parts 37 and 38. Rail stations must make public spaces ADA accessible through such accommodations as high-level platforms that allow boarding for persons in wheelchairs and announcements for the visually impaired. Major elements included in AMTRAK's *Intercity Rail Stations Served by Amtrak* includes:

- “Platforms must be ‘readily accessible to and usable by individuals with disabilities, including individuals who use wheelchairs.’”²²
- Design plans should “anticipate the use of one or more of the following assistive boarding devices as provided for in the ADA regulations:
 - Car-borne or platform-mounted wheelchair lifts;
 - Ramps or bridge plates; or
 - Mini-high platforms. (Note, the placement of the mini-high platforms should not have the effect of channeling passengers into a narrow space between the face of the higher-level platform and the edge of the lower platform, since this may place passengers uncomfortably close to moving trains.)”²³
- Platform edges must have a “detectable warning” that “shall contrast visually with adjacent surfaces, be 24 inches (610 mm) wide, and run the full length of the public use areas of the platform.”²⁴
- At stations with raised platforms, there may be a gap of no more than 3” horizontal and 5/8” vertical between platform edge and entrance to the rail car (recognizing, however, that it is very unlikely that commuter and intercity rail operators can meet this requirement). Where it is not operationally or structurally feasible to meet such gap requirements, assistive boarding devices (e.g., ramps or bridge plates, car-borne or platform mounted lifts, mini-high

²² “Intercity Rail Stations Served by Amtrak,” Page Appendix 2-3.

²³ “Intercity Rail Stations Served by Amtrak,” Page Appendix 1.

²⁴ “Intercity Rail Stations Served by Amtrak,” Page Appendix 1.

platforms) are permissible means to accommodate passengers with disabilities. Regulatory approval is not required.

- Platform length is not mandated by the ADA.
- Low level platforms must be 8” (205 mm) minimum ATR, although lower levels are permissible where vehicles are boarded from sidewalks or at street level.”²⁵

3.2 LOCAL AND STATE BUILDING REGULATIONS

Stations must meet all local and state building codes. Where codes conflict with proposed station improvements, either administrative or legislative relief should be sought or plans modified. For example, some municipalities have substantial dedicated parking requirements for commercial establishments. Frequently, stations will have retail or food vendors that might fall under zoning code requiring dedicated parking on a formula basis, such as per square foot. In this instance, a station owner/operator might seek relief because many of the customers using the commercial establishment will be using rail services and thus not need parking.

3.3 PARTNERSHIPS WITH GOVERNMENTS, AGENCIES, AND BUSINESSES

In many instances, stations will not be owned or maintained by the operator of NNEIRI service. This will require NNEIRI operators to make partnerships with local site owners and agreements to uphold certain maintenance standards and to make improvements.

- Partnerships with Local and State Governments – NNEIRI Service will rely on state and local governments and agencies and should seek to create and maintain partnerships to ensure quality and uninterrupted service.
- Partnerships with Railroads – In many instances, NNEIRI service will utilize private or AMTRAK owned railroad stations. The NNEIRI operator should create special partnerships with these organizations to ensure standards and operations are maintained.
- Public-Private Partnerships – Potential public-private partnerships (P3) exist at station sites and should be explored on a case by case basis. Partnerships could include food and retail vendors in and around stations and station operation/maintenance agreements. More complex P3s could include construction of office, hotel, or residential space around a station.²⁶ However, when evaluating a potential P3, the interests of the traveling public should be paramount because disrupting the passenger experience might impact ridership and service viability.

²⁵ “Intercity Rail Stations Served by Amtrak,” Page Appendix 2-3.

²⁶ “AREMA Manual for Railway Engineering,” American Railway Engineering and Maintenance-of-Way Association. 2004 Update, Page 14-6.7.

- Maintenance – Maintenance and upkeep of stations must be accommodated. This can be achieved through an agreement with another organization and the rail operator or with a contractor agreement.

4 EXISTING STATION CONDITIONS

All existing intercity stations and several proposed sites were evaluated for potential inclusion in the development plan for the NNEIRI service using the criteria described in Section 2. The criteria provides the basis for an initial recommendation that will be further refined with ridership analysis and public review. Due to size, existing operations, and intermodal connectivity, station stops in Boston (South Station), Springfield (Union Station), Montreal (Central Station), and New Haven (Union Station) are considered critical to NNEIRI operations.

4.1.1 South Station, Boston, Massachusetts

South Station is a passenger rail station located on Atlantic Avenue and Summer Street in downtown Boston, Massachusetts. The station is the largest passenger rail station in New England, serving three AMTRAK lines, eight MBTA Commuter Rail lines, and the seasonal CapeFlyer. MBTA owns and maintains the transportation facilities at South Station and Beacon Management owns and operates office space at the station. South Station is considered an ADA accessible station. Pictures 4.1 and 4.2 and Figure 4.1 highlight the station and population density of the surrounding area.

The station has thirteen tracks and seven high-level platforms, passenger waiting and ticketing facilities, retail and food vendors, and public safety facilities. Connections are available to the MBTA's Red Line and Silver Line rapid transit services, local bus lines, private shuttle bus routes, and intercity bus lines.

Motorists at South Station have direct connections to Interstates 90, located 0.5 miles from exit 20, and 93, 0.6 miles from the Atlantic Avenue merge at exit 20; and parking is available at the South Station Bus Terminal garage, located on the southern part of the site. There are also bike cages and bike rental facilities on site. The station is located near the heart of Boston's central business district, with numerous large commercial, government, and cultural buildings in close proximity.

MassDOT is developing an expansion plan for South Station to accommodate additional passenger rail service; South Station currently operates at capacity during peak hours and MassDOT's plans will add amenities and capacity to the station. Additionally, Hines Interest LLP owns air rights above the station's tracks and platforms and has plans to develop a 41 story tower on the site.



Pictures 4.1 and 4.2: South Station Headhouse and Platforms (Picture 4.1 from the Northeast Corridor Commission)

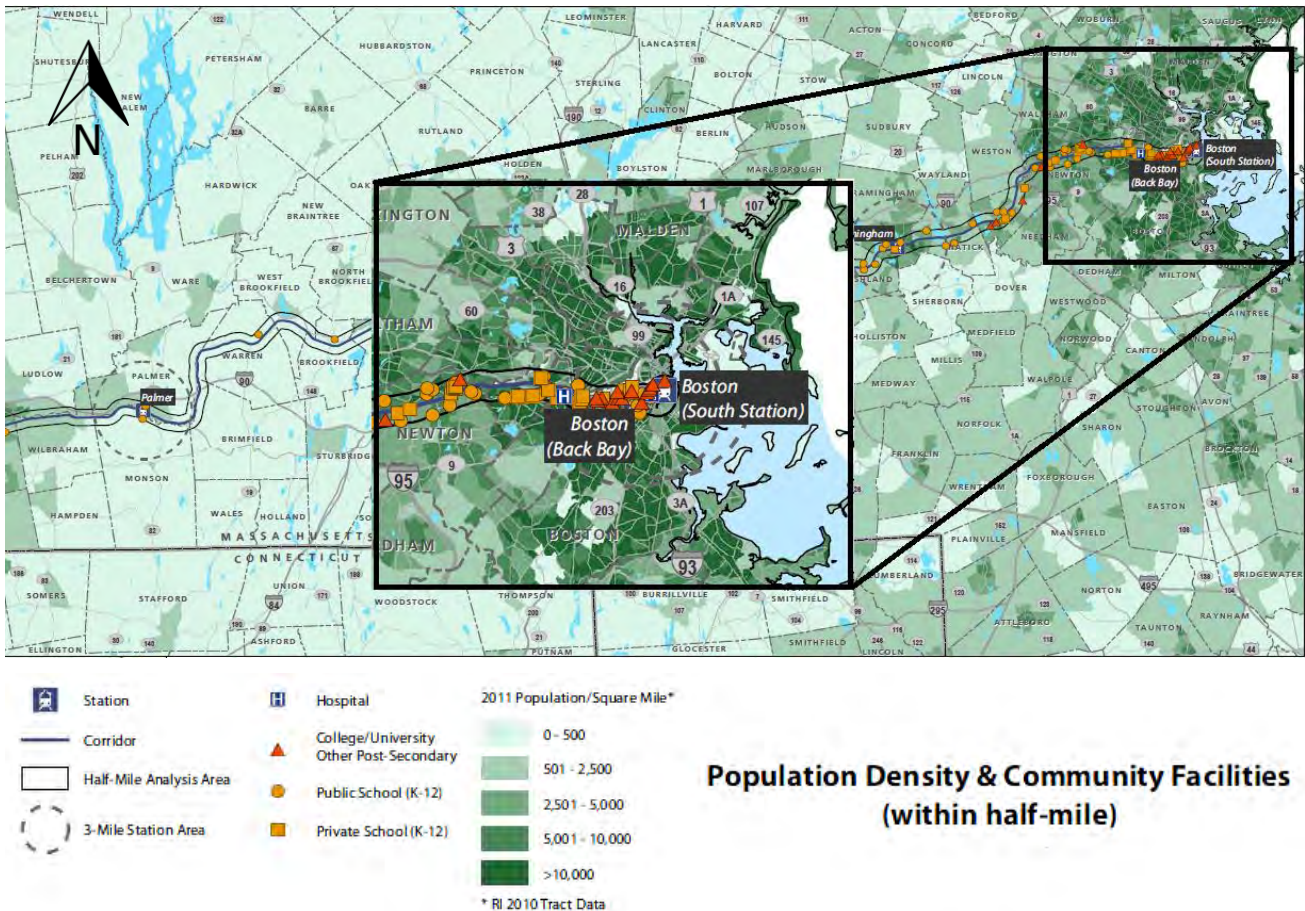


Figure 4.1: Boston (Back Bay and South Station) Locations and Key

See the Photograph Appendix for additional pictures of the station and surrounding site.

4.1.2 Back Bay Station, Boston, Massachusetts

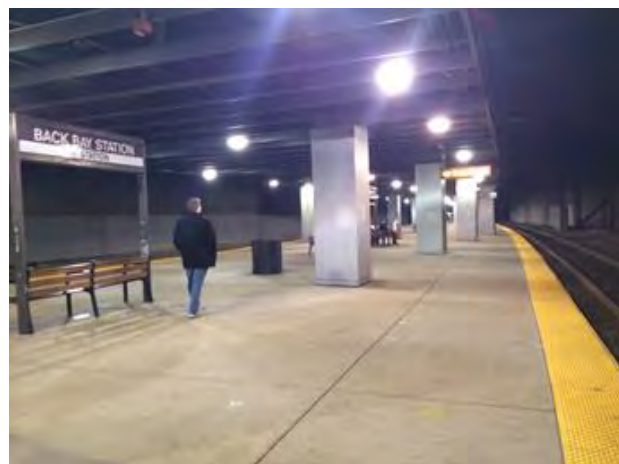
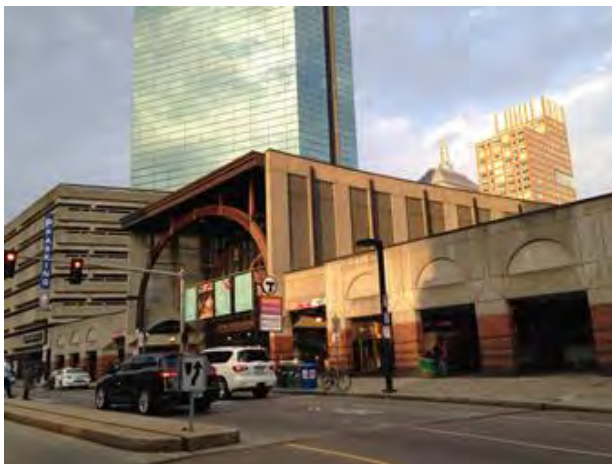
Back Bay Station is a passenger rail station located on Dartmouth Street, in the Back Bay neighborhood of Boston, Massachusetts. The station is served by three AMTRAK lines and four MBTA commuter rail lines. The station is owned and operated by MBTA. Back Bay Station is ADA accessible. Pictures 4.2 and 4.3 and Figure 4.1 highlight the station and population density of the surrounding area.

Back Bay Station has five rail tracks and three platforms used by AMTRAK and Commuter Rail trains. Additionally, the MBTA Orange Line rapid transit service has two tracks and one island platform. Local and express buses utilize a bus loop located on the eastern side of the station. The station has no on site parking but private parking garages are proximate to the station. The station is served by MBTA Orange Line rapid transit service, local MBTA bus service, and private shuttle buses.

The station features a large headhouse with passenger waiting and ticketing areas, retail and food vendors, and public safety facilities.

Back Bay Station is a 0.6 mile trip from Interstate 90 exit 22 and is 1.1 miles from Interstate 93 exit 20. The station is in a dense mixed-use district with large office towers, residential buildings, and cultural attractions nearby.

In 2010, MBTA received federal stimulus money to overhaul ventilation systems in order to improve the station's air quality.



Pictures 4.3 and 4.4: Back Bay Headhouse and Platforms used for Westbound Service

See the Photograph Appendix additional pictures of the station and surrounding site.

4.1.3 Weston Tolls/Route 128 Site, Weston, Massachusetts

A potential station site is located near the Weston Tolls on Interstate 90/Massachusetts Turnpike, immediately west of Interstate 95/Route 128. Due to a combination of track geometry, existing infrastructure, and natural features, the Liberty Mutual campus and Leo J. Martin Golf Course, are

assumed to be the only potential locations for a station in the vicinity of the Weston Tolls/Route 128 area; existing MBTA Commuter Rail stations at Auburndale and Wellesley Hills are too far from highway interchanges to accommodate major intercity rail service. The potential Weston Tolls/Route 128 station sites are located in Weston, Massachusetts – south of Interstate 90, west of Interstate 95, east of Park Road, and north of the Leo T. Martin Golf Course and Recreation Road. The surrounding district is primarily parkland, golf course land, commercial office, low density residential development, and highway infrastructure. The site is less than one mile from Exit 23 on Interstate 95 and Exit 15 on Interstate 90. Pictures 4.5 and 4.6 highlight the potential station site location.

The Liberty Mutual and golf course sites are considered the only feasible site for a station in this location due to sharp curves immediately east and west that preclude station development beyond a narrow right of way immediately west of where the Corridor passes over Interstate 95. The curves are too sharp to allow for a high-level station consistent with modern station design.

The Massachusetts Turnpike Authority proposed a Commuter Rail station and 600-car park and ride on the site of the Liberty Mutual corporate park in 1998. However, the site was leased by Liberty Mutual for 99 years and the company developed 80,000 square feet of office space and 224 parking spaces in the early 2000s. Developing a station would require acquisition of a significant portion of the Liberty Mutual site.

The Leo J. Martin Memorial Golf Course, south of the right of way, is an alternative site for a station in this location. Constructing a station on this site would require redevelopment of the golf course and possibly realignment and expansion of Recreation Road and the Recreation Road off-ramp from Interstate 95 to accommodate increased traffic.



Pictures 4.5 and 4.6: Weston Tolls/Route 128 Potential Station Site (maps.google.com)

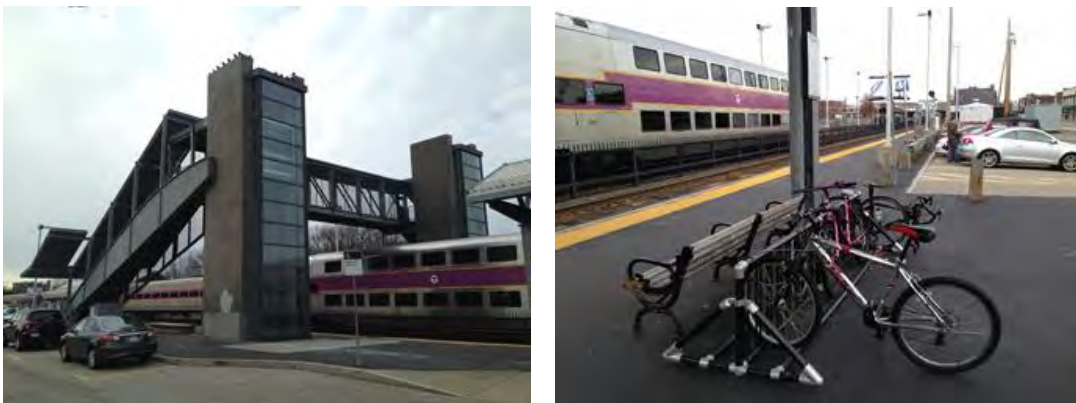
See the Photograph Appendix pictures of the station and surrounding site.

4.1.4 Framingham Station, Framingham, Massachusetts

Framingham Station is a passenger station located at the intersection of Irving and Concord Streets in Framingham, Massachusetts. The station is served by AMTRAK's Lake Shore Limited Service and MBTA's Framingham/Worcester Commuter Rail Line and is owned and managed by the MBTA. The station meets ADA accessibility guidelines. Pictures 4.7 and 4.8 show the station and platform and Figure 4.2 highlights population density of the surrounding area.

Framingham Station has two low-level at grade platforms, with access from various points on surrounding streets. Two tracks serve the station. The station has a 166 space parking lot, with four spaces designated for disabled passengers. The station also has bike parking. The station facilities meet ADA accessibility requirements. The station is 5 miles from Exit 13 on Interstate 90 via local city streets and is also proximate to Massachusetts State Routes 9 and 30. Frequent local bus service and shuttles serve the station through the MetroWest Regional Transit Authority (MWRTA).

The station is located in a suburban town center, with a mix of commercial, institutional, and residential buildings. The surrounding district is pedestrian friendly and the station is easily accessible to pedestrians.



Pictures 4.7 and 4.8: Framingham Station Pedestrian Overpass and Platform

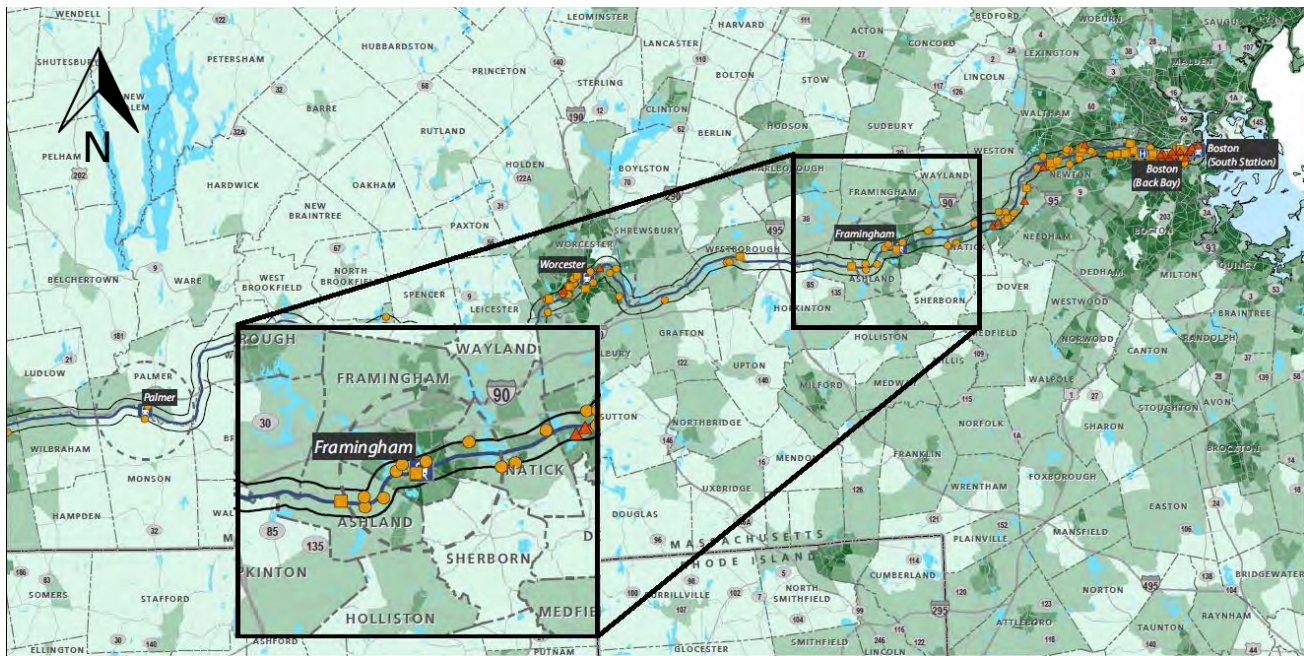


Figure 4.2: Framingham Location

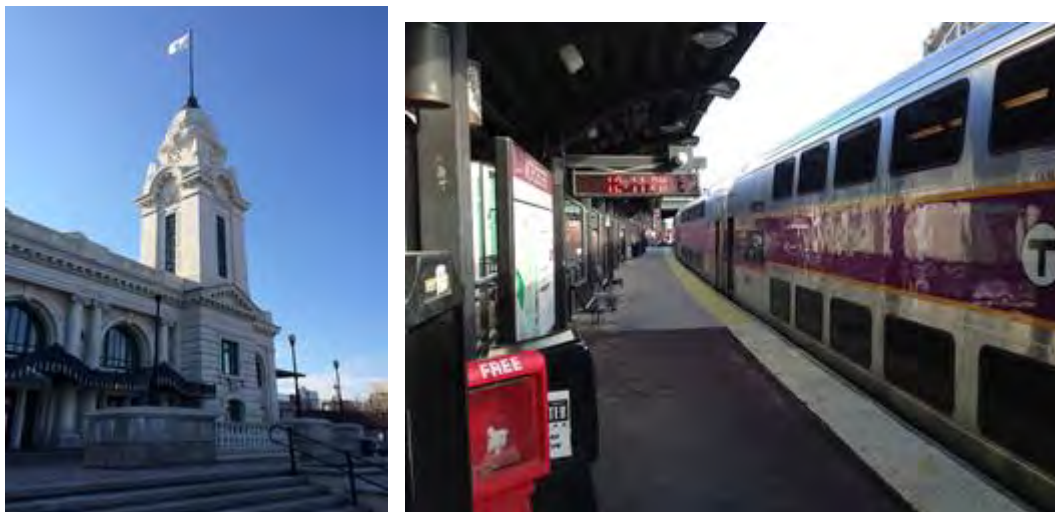
See the Photograph Appendix additional pictures of the station and surrounding site.

4.1.5 Union Station, Worcester, Massachusetts

Union Station is a passenger rail station located in downtown Worcester, Massachusetts on Washington Square. The station is served by AMTRAK's Lake Shore Limited service and MBTA Commuter Rail's Framingham/Worcester Line. The station is owned and managed by the Worcester Redevelopment Authority. Pictures 4.9 and 4.10 show the station headhouse and platforms and Figure 4.3 highlights population density of the surrounding area.

The station features a single high-level platform, five tracks, large headhouse with passenger waiting and ticketing areas, retail and food vendors, and public safety facilities. Wayfinding at Union Station can be difficult, with signs incomplete in certain areas. Integrated into the rail station is the Union Station bus station, serving as the hub for the Worcester Regional Transit Authority (WRTA) bus system and intercity busses. Bus service in the Union Station area is frequent and serves an extensive region around Downtown Worcester. The station facilities meet ADA accessibility requirements. The station has a 500 car garage with nine designated as ADA accessible. The facility is 2.2 miles from to Interstates 190; 0.8 miles from exit 16 on Interstate 290, and within five miles of Exit 10A on Interstate 90.

Union Station is located in a high density area adjacent to Worcester's central business district, with numerous business, government, institutional, and residential buildings in close proximity. The station is reasonably accessible to pedestrians through sidewalks and passageways from the bus station and garage; however, Interstate 290 and adjacent elevated railroad tracks create a barrier for pedestrians accessing the station.



Pictures 4.9 and 4.10: Worcester Union Station Headhouse and Platform

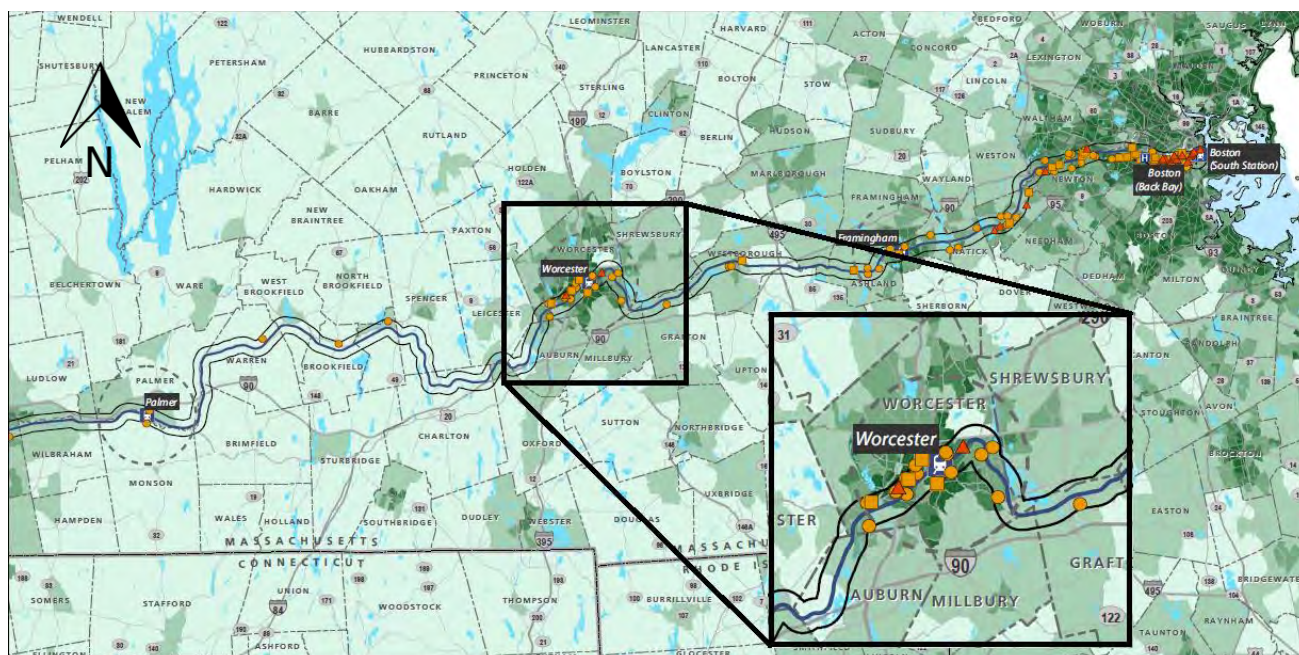


Figure 4.3: Worcester (Union Station) Location

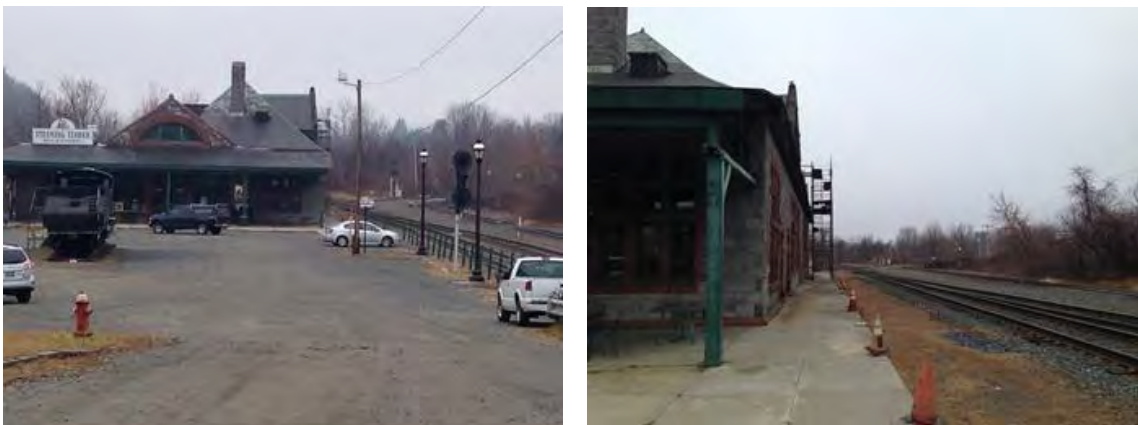
See the Photograph Appendix additional pictures of the station and surrounding site.

4.1.6 Palmer Station, Palmer, Massachusetts

Palmer Station is a potential station in the center of Palmer, Massachusetts. Although AMTRAK's Lake Shore Limited Service passes through Palmer, no passenger rail service currently makes a station stop in the town. Currently, a historic headhouse, now used as a restaurant, stands adjacent to the potential station site on Depot Street and three tracks pass to the north and one to the south of the historic station. The historic station site is potentially incompatible with current railroad operations and further study must be done to determine operational feasibility of the site. Pictures 4.11 and 4.12 show the station and platforms and Figure 4.4 highlights population density of the surrounding area.

The station site is near the existing and frequent Pioneer Valley Transit Authority bus services in Palmer town center, approximately 0.25 miles away. The station is approximately two miles from exit 8 on Interstate 90.

The Palmer Station site is located near Palmer center, with local commercial, civic, and cultural amenities nearby. The surrounding district is pedestrian friendly however safe pedestrian access to the site is limited due to the lack of sidewalks on Depot Street.



Pictures 4.11 and 4.12: Historic Palmer Headhouse and Platform Area

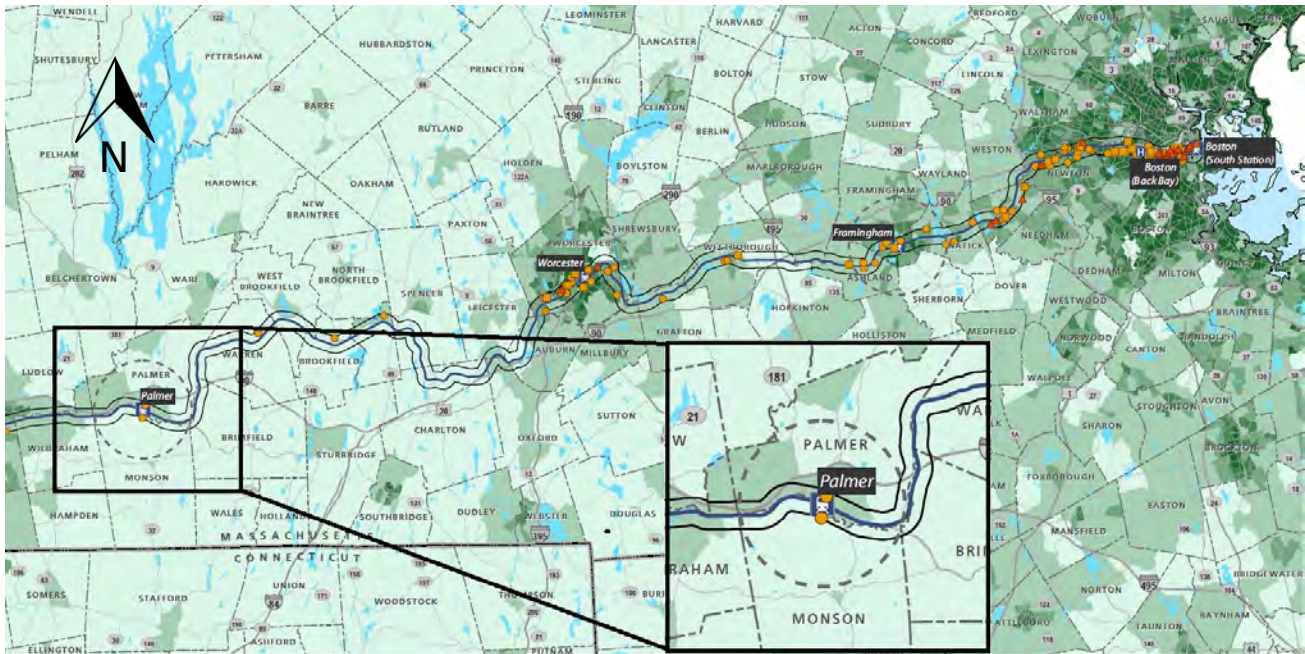


Figure 4.4: Palmer Location

See the Photograph Appendix for additional pictures of the station and surrounding site.

4.1.7 Union Station, Springfield, Massachusetts

Union Station is a passenger rail station in downtown Springfield, Massachusetts on Washington Square. The station is served by AMTRAK's Lake Shore Limited, Vermonter, New Haven to Springfield Shuttle, and limited Northeast Regional services. The station is owned and managed by the Springfield Redevelopment Authority. Pictures 4.13 and 4.14 show the station and platforms and Figure 4.5 shows the population density around the station.

The station includes six tracks and two low-level platforms; however, only one is currently in use. The existing station also includes passenger waiting and ticketing areas and public safety facilities. Union Station currently meets ADA accessibility standards. The historic station building on the north side of the site has been abandoned but the City of Springfield is in the process of redeveloping the station. The work will include demolishing the existing baggage building, constructing a large parking garage and a 24 bay bus terminal on the site, and rehabilitation of the existing Union Station building, including improved passenger amenities and onsite office and commercial space. The station is currently not served by intercity busses, but will be served by intercity service as part of the rehabilitation of the historic headhouse. Local Pioneer Valley Transit Authority busses provide frequent service from the station to points around the Springfield area. Parking is available adjacent to the station and some parking spaces are designated for ADA accessibility. The facility is located 0.8 miles from exit 7 on I-91 and 0.9 miles from exit 1A from I-291.

Union Station is located in a high density area adjacent to Springfield's central business district with numerous business, government, institutional, and residential buildings in close proximity. The surrounding district is pedestrian friendly and the station is easily accessible to pedestrians.



Pictures 4.13 and 4.14: Existing Union Station Headhouse and Platform Area



Pictures 4.15 and 4.16: Historic Union Station Headhouse and Track Space

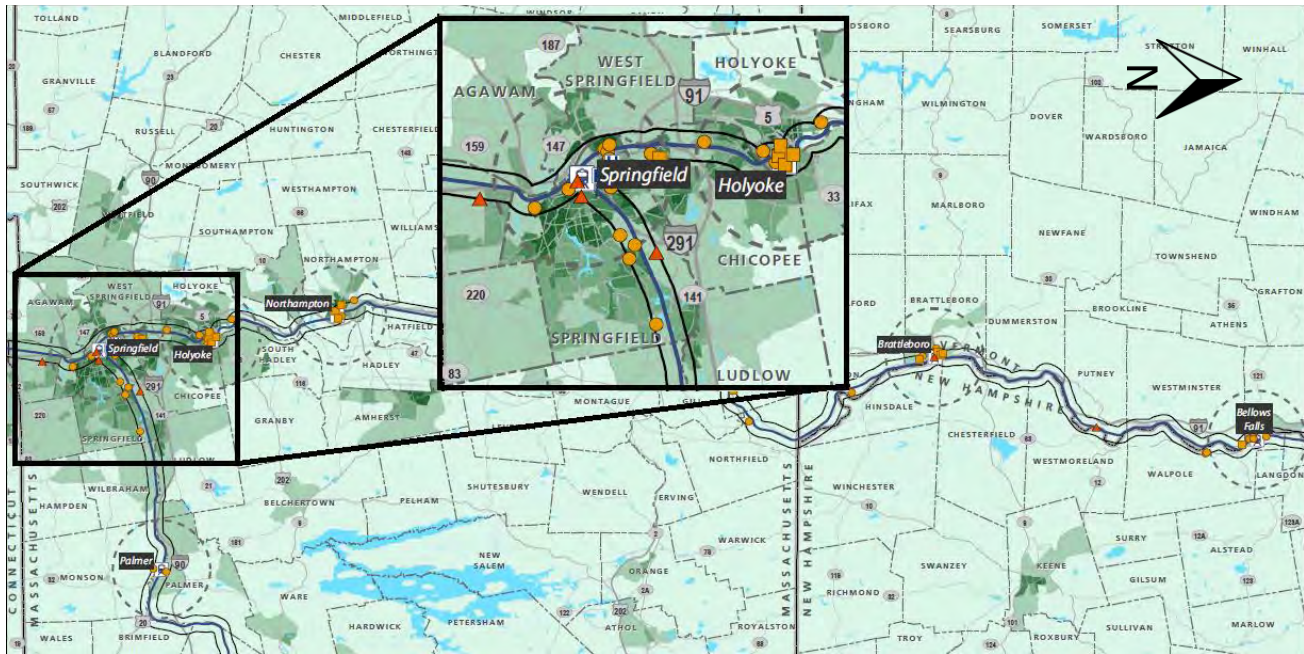


Figure 4.5: Springfield (Union Station) and Holyoke Locations

See the Photograph Appendix for additional pictures of the station and surrounding site.

4.1.8 Holyoke Station, Holyoke, Massachusetts

Holyoke Station is a planned passenger rail station on Dwight Street in Holyoke, Massachusetts. The station will be served by AMTRAK's Vermonter Service following completion of the Knowledge Corridor project. Pictures 4.17 and 4.18 show the location of the future station and platforms, and Figure 4.5 shows the population density around the station.

When constructed, Holyoke Station will include a single platform, two tracks, and outdoor passenger waiting areas. Bicycle parking will be available onsite. Since the project is still in the design stage, the future availability of vehicular parking is still undefined. Existing Pioneer Valley Transit bus services serve Holyoke, but it is unclear if busses will be rerouted to accommodate the new station. The station is one mile from exit 5 on Interstate 391 and within 2.9 miles of exit 16 on Interstate 91.

Holyoke Station is located near Holyoke center, with local commercial, civic, and cultural amenities nearby. The station is located south of the historic and abandoned Connecticut River Station headhouse. The surrounding district is pedestrian friendly and the station will be accessible to pedestrians.



Pictures 4.17 and 4.18: Proposed Holyoke Station Site

See the Photograph Appendix for additional pictures of the station and surrounding site.

4.1.9 Northampton, Massachusetts

Northampton Station is a future passenger rail station located on Strong Street in Northampton, Massachusetts. The station will be served by AMTRAK's Vermonter service. The historic Union Station headhouse is privately owned and will not be a part of the future passenger rail station. Pictures 4.19 and 4.20 show the station and platforms and Figure 4.6 highlights the population density of the surrounding area.

Northampton Station will be rehabilitated as a part of the Knowledge Corridor project and include a single platform, single track, and outdoor passenger waiting areas. Bicycle parking will be available onsite and the station will be adjacent to the Manhan Rail Trail. The future availability of vehicular parking is being determined. The station will be proximate to existing and frequent Pioneer Valley Transit bus services. The station is approximately 1.3 miles from exit 19 on Interstate 91. Massachusetts State Route 9 is directly adjacent to the station site.

Northampton Station is located within Northampton center, with local commercial, civic, and cultural amenities nearby, including Smith College. The station is also connected by transit to Amherst, with a large student and business cluster. The surrounding district is pedestrian friendly and the station is easily accessible to pedestrians.



Pictures 4.19 and 4.20: Historic Northampton Headhouse and Proposed Station

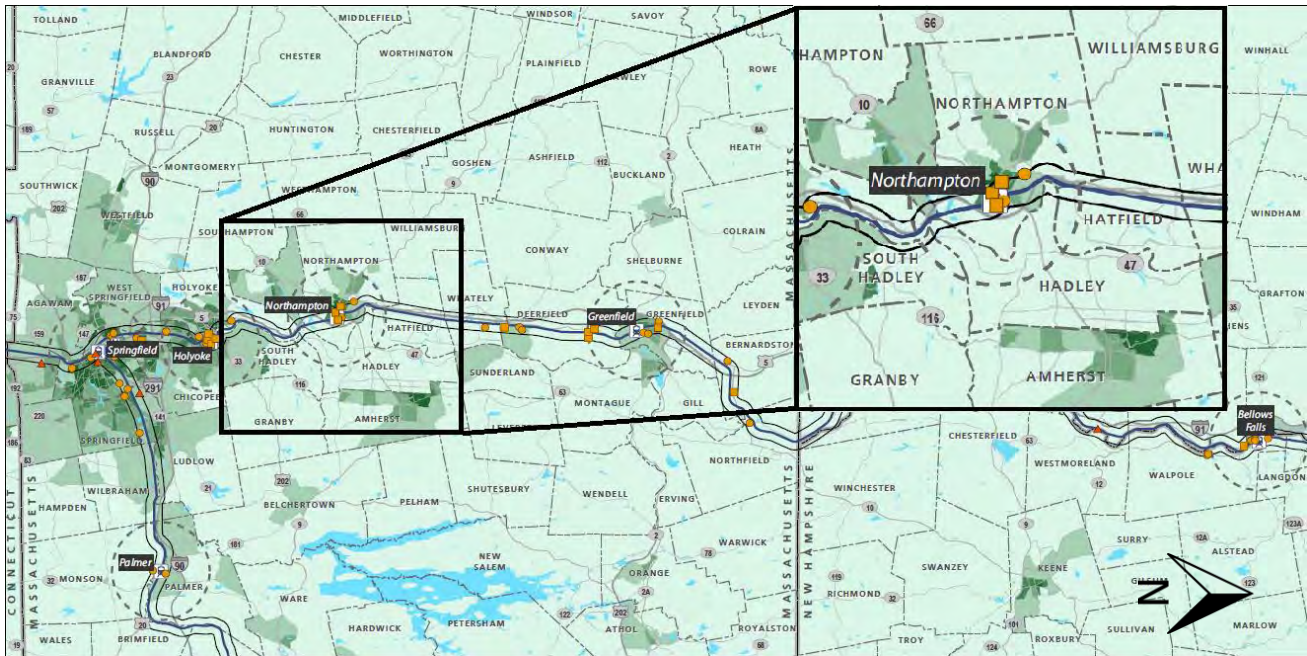


Figure 4.6: Northampton Location

See the Photograph Appendix for additional pictures of the station and surrounding site.

4.1.10 John W. Olver Transit Center, Greenfield, Massachusetts

Greenfield Station is a future passenger rail station located on Olive Street and Bank Row in Greenfield, Massachusetts, to be integrated into the recently completed John W. Olver Transit Center. The station will be served by AMTRAK's Vermonter service and owned by the Franklin

Regional Transit Authority (FRTA). Pictures 4.21 and 4.22 show the station and platforms and Figure 4.6 highlights the population density of the surrounding area.

Currently, the John W. Olver Transit Center has an enclosed waiting area, restrooms, café, and outdoor waiting area for passengers; however the station does not provide ticketing or baggage services. The station has no dedicated vehicular parking but bicycle parking is available onsite. The station serves as a hub for FRTA buses with frequent service to the Greenfield region and serves intercity Peter Pan and Greyhound buses and is 1.5 miles from exit 26 on Interstate 91 via local city streets and .10 miles from adjacent Massachusetts State Route 2.

The station will feature a single platform, two tracks, and passengers will have access to existing facilities inside the transit center building. The Transit Center was built to be passenger rail ready and planned connections from the center to platform were incorporated during design.

The Transit Center is located near Greenfield town center, with local commercial, civic, and cultural amenities nearby. The surrounding district is pedestrian friendly and the station is easily accessible to pedestrians.



Pictures 4.21 and 4.22: Proposed Greenfield Station Headhouse and Platform Area

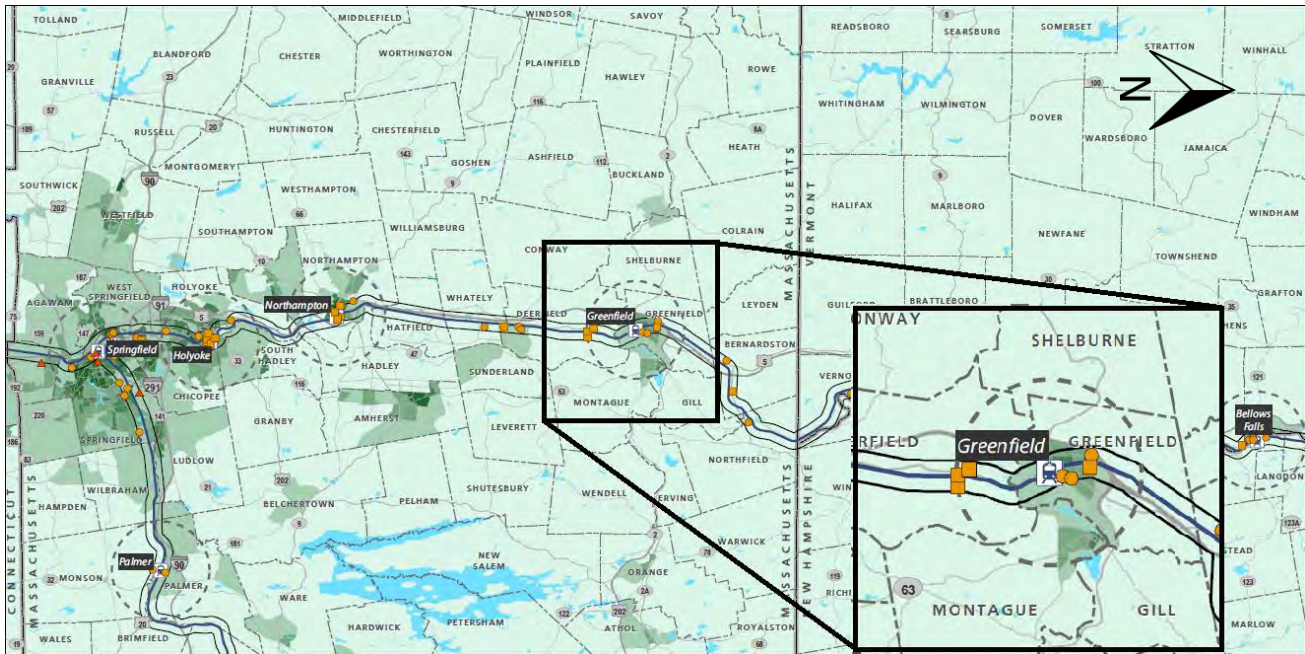


Figure 4.7: Greenfield Location

See the Photograph Appendix for additional pictures of the station and surrounding site.

4.1.11 Brattleboro Station, Brattleboro, Vermont

Brattleboro Station is a passenger rail station located on Vernon Road in Brattleboro, Vermont. The station is served by AMTRAK's Vermonter. The platforms are owned and operated by NECR. Pictures 4.23 and 4.24 show the station and platforms and Figure 4.8 highlights the population density of the surrounding area.

The station has a single platform and enclosed waiting area; however the station does not provide ticketing or baggage services. Two tracks pass through the station area, however, only the western track serves the platform. The station has no dedicated vehicular or bicycle parking. The station is proximate to the Current, a bus network serving the southeastern Vermont region with frequent service around the Brattleboro region. The station is 1.9 miles from Exit 2 on Interstate 91 via local city streets.

The station is located near Brattleboro town center, with local commercial, civic, and cultural amenities nearby. The surrounding district is pedestrian friendly and the station is accessible to pedestrians.



Pictures 4.23 and 4.24: Brattleboro Station Platform Area

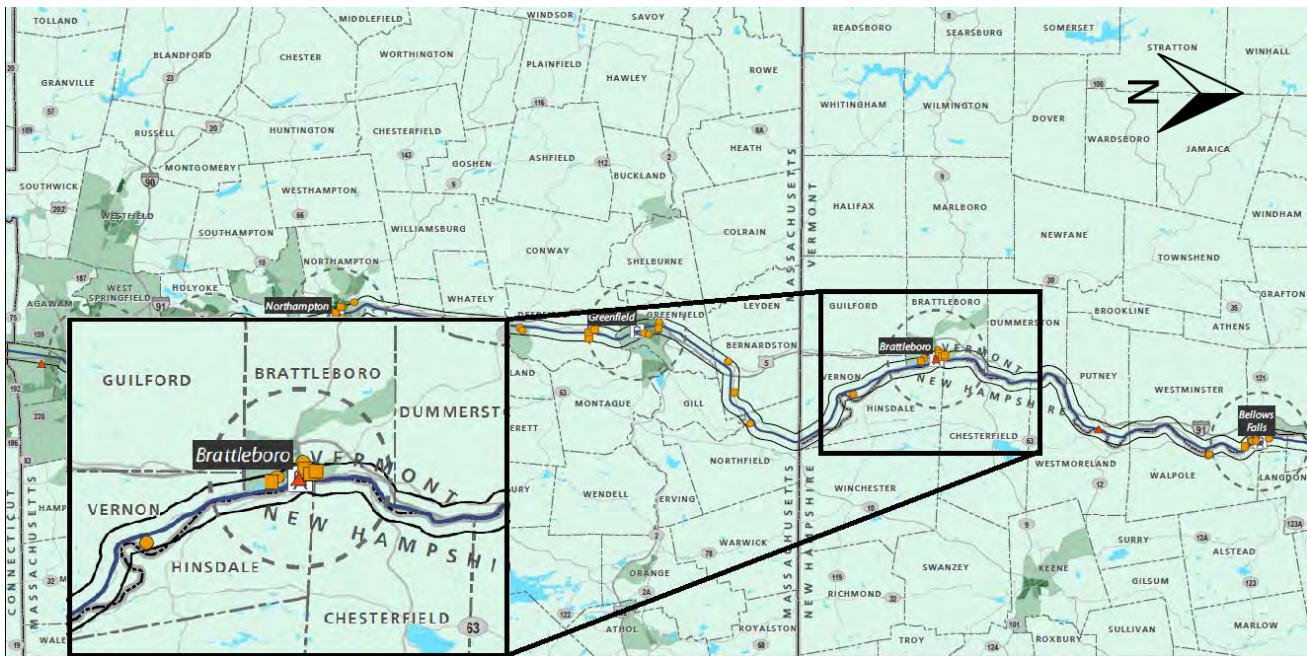


Figure 4.8: Brattleboro Location

See the Photograph Appendix for additional pictures of the station and surrounding site.

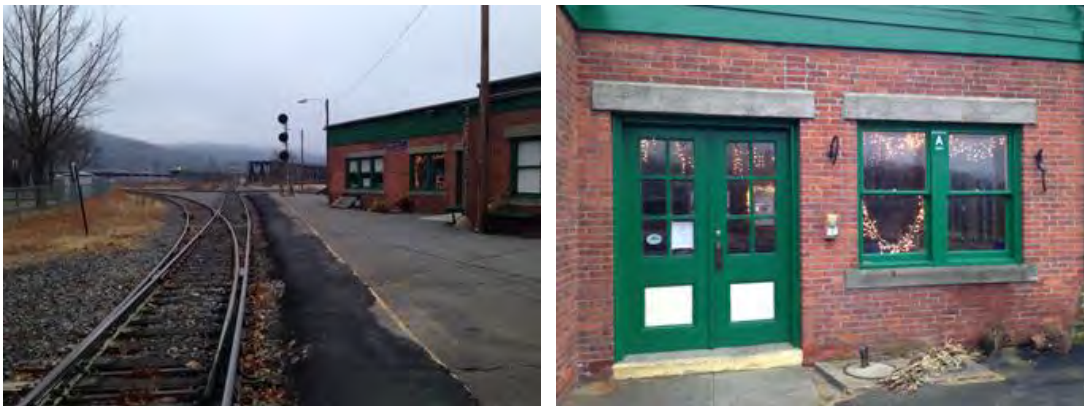
4.1.12 Bellows Falls Station, Rockingham, Vermont

Bellows Falls Station is a passenger rail station located on Depot Street in Rockingham, Vermont. The station is served by AMTRAK's Vermonter service and the Green Mountain Railroad, a local tourist train. The platforms and station are owned and operated by the Green Mountain Railroad

Corporation. Pictures 4.25 and 4.26 show the station and platforms and Figure 4.9 highlights the population density of the surrounding area.

The station has a single platform, two tracks (one north and one south of the platform area), and historic headhouse with an enclosed waiting area; however the station does not provide ticketing or baggage services. Ten short-term parking spaces are provided at the station; accessible parking spaces are provided. The station is proximate to the Current, a bus network serving the southeastern Vermont region with daily service to points in the Bellows Falls region. The station does not have dedicated bicycle parking. The station is 3.2 miles from Exit 6 on Interstate 91 via local city streets.

The station is located in an industrial area in eastern Bellows Falls. Some residences and commercial facilities are located near the station. The surrounding district is pedestrian friendly and the station is accessible to pedestrians.



Pictures 4.25 and 4.26: Bellows Falls Station Platform Area and Entrance to Passenger Waiting Area

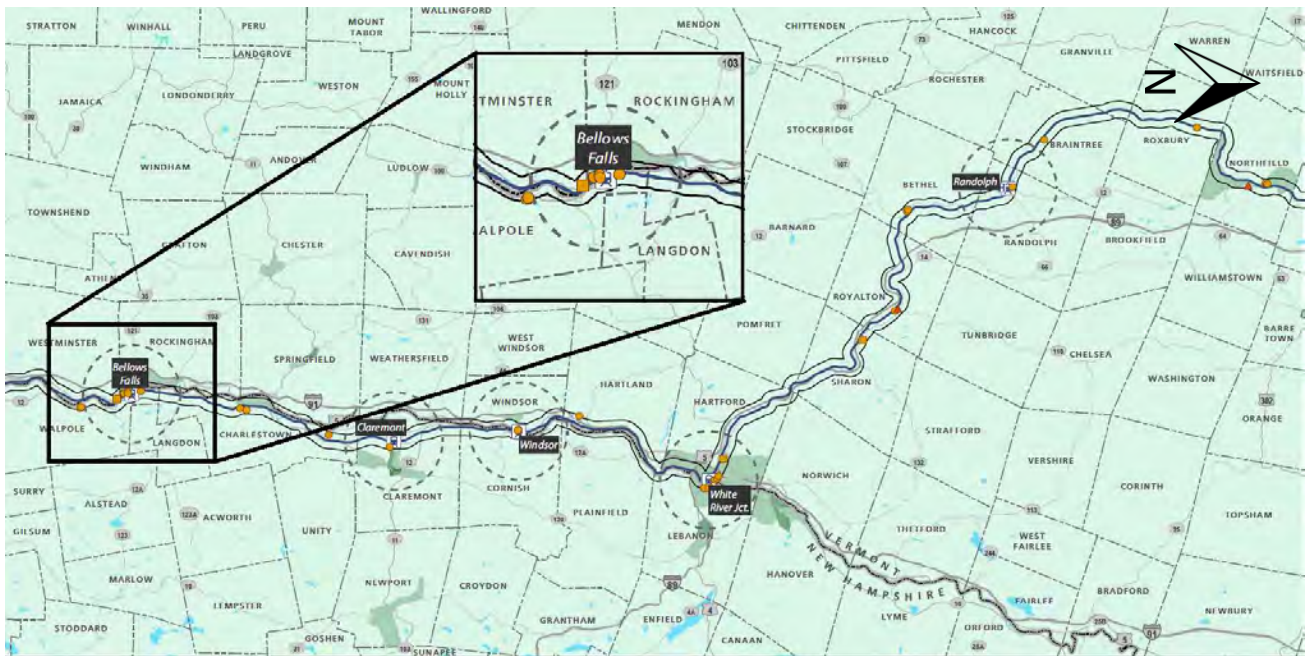


Figure 4.9: Bellows Falls Location

See the Photograph Appendix for additional pictures of the station and surrounding site.

4.1.13 Claremont Station, Claremont, New Hampshire

Claremont Station is a passenger rail station located near the intersection of Plains Road and Maple Avenue in Claremont, New Hampshire. The station is served by AMTRAK's Vermonter service. The platforms are owned by NECR and the headhouse is a bicycle sales and repair shop. Pictures 4.29 and 4.30 show the station and platforms and Figure 4.11 highlights the population density of the surrounding area.

The station has a single platform, two tracks, and historic headhouse; however the station does not provide ticketing, baggage services, or enclosed waiting areas. Fifteen parking spaces are provided at the station; accessible parking spaces are provided. No connecting bus service is currently provided at the station. Access to bicycles is possible through the adjacent bicycle shop. The station is 4.2 miles from Exit 8 on Interstate 91 via local city streets.

The station is located in a rural area west of central Claremont. Some residences and commercial facilities and Claremont Airport are located near the station. The station is not easily accessible to pedestrians.



Pictures 4.29 and 4.30: Station Headhouse and Grad Crossing (Great American Stations and maps.google.com)

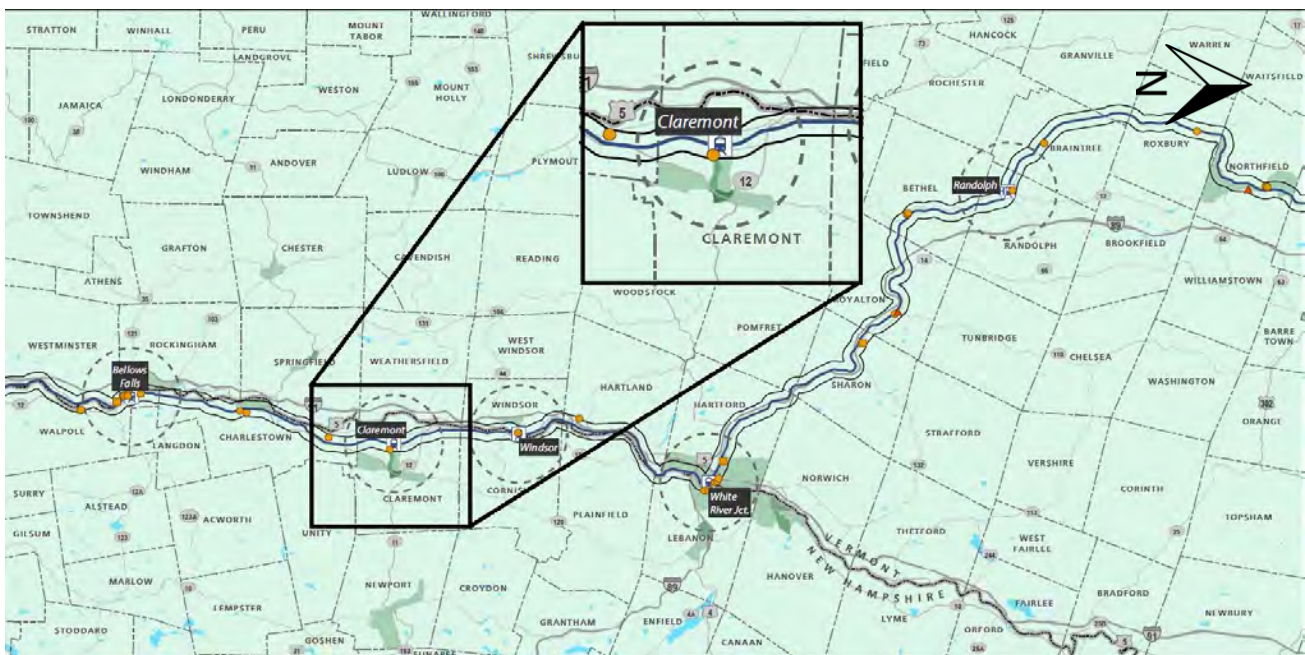


Figure 4.11: Claremont Location

See the Photograph Appendix for additional pictures of the station and surrounding site.

4.1.14 Windsor-Mt. Ascutney Station Station, Windsor, Vermont

Windsor-Mt. Ascutney Station Station is a passenger rail station located on Depot Ave in Windsor, Vermont. The station is served by AMTRAK's Vermonter service. The platforms are owned by NECR and the station is owned and operated as the Windsor Station Pub. The station does not meet ADA accessibility guidelines. Pictures 4.27 and 4.28 show the station and platforms and Figure 4.10 highlights the population density of the surrounding area.

The station has a single platform, single track, and historic headhouse; however the station does not provide ticketing or baggage services and the pub is not necessarily available for non-restaurant customers. Parking is provided in a lot owned by N.L Wilson Railways, LLC; accessible parking spaces are not provided. The station is proximate to the Current, a bus network serving the southeastern Vermont region with daily service to points in the region. The station is 4 miles from Exit 9 on Interstate 91 via local town streets.

The station is located in Windsor town center, with local commercial, civic, and cultural amenities. The surrounding district is pedestrian friendly and the station is easily accessible to pedestrians.



Pictures 4.27 and 4.28: Windsor Station Historic Headhouse and Platform (maps.google.com)

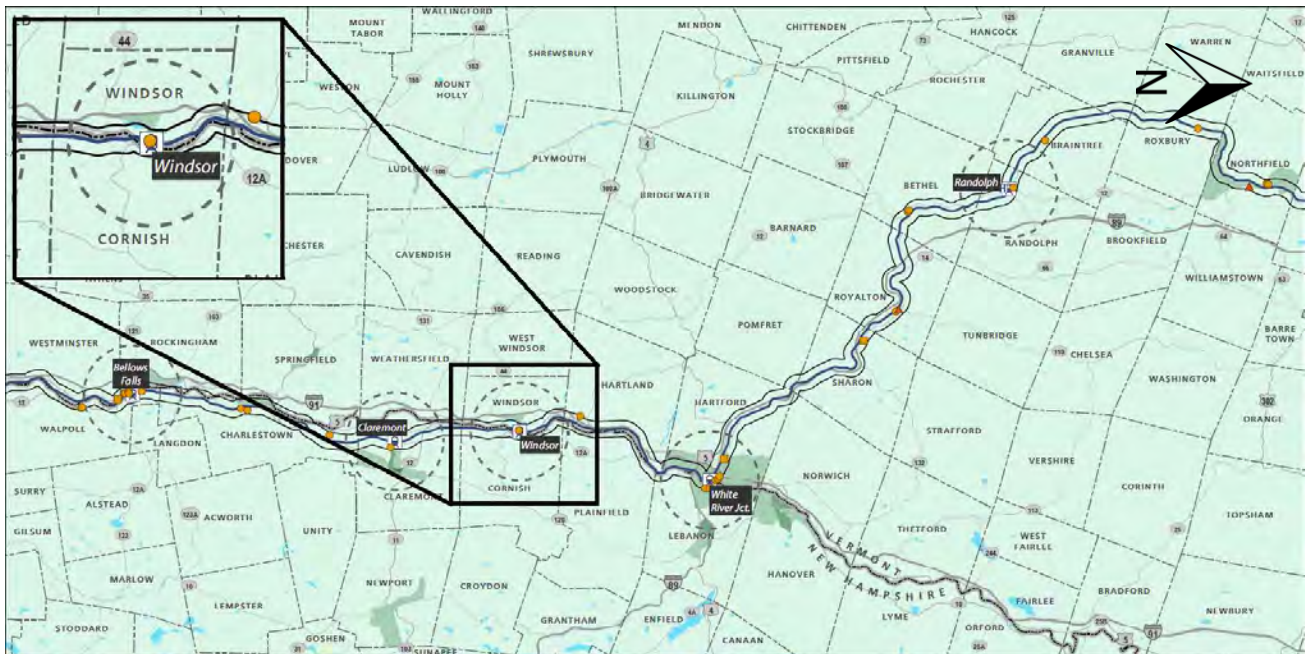


Figure 4.10: Windsor Location

See the Photograph Appendix for additional pictures of the station and surrounding site.

4.1.15 White River Junction, Vermont

White River Junction Station is a passenger rail station located on Railroad Row in Hartford, Vermont. The station is served by AMTRAK's Vermonter. The platforms are owned by NECR and the station is owned by the State of Vermont. Pictures 4.31 and 4.32 show the station and platforms and Figure 4.12 highlights the population density of the surrounding area.

The station has a single platform, three tracks, and historic headhouse with a waiting room, transportation museum, and a Vermont Welcome Center; however the station does not provide ticketing or baggage services. Sixteen parking spaces are provided in a lot owned by the State of Vermont and ADA accessible parking spaces are provided. The station is proximate to Advanced Transit, a public bus service with frequent service in the Hanover, Lebanon, White River Junction region and connects to a Greyhound bus station. The station is 1.8 miles from Exit 9B on Interstate 91 and Exit 11 on Interstate 89 via local roads. The station is also near Lebanon Municipal Airport (with service to Boston and White Plains, New York).

The station is located near in the White River Junction Historic District, with local commercial, civic, and cultural amenities, including the New England Transportation Institute and Museum. The surrounding district is pedestrian friendly and the station is easily accessible to pedestrians.



Pictures 4.31 and 4.32: White River Junction Station Headhouse and Adjacent Parking

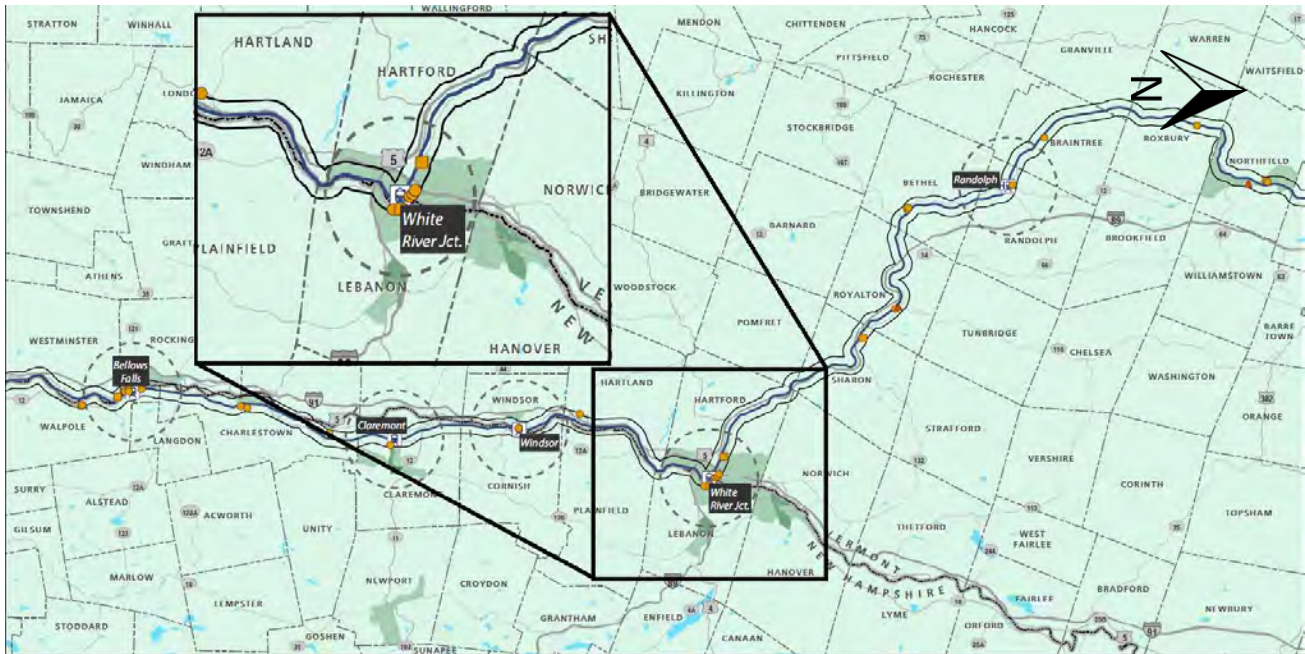


Figure 4.12: White River Junction Location

See the Photograph Appendix pictures of the station and surrounding site (Figure 4.12).

4.1.16 Randolph Station, Randolph, Vermont

Randolph Station is a repurposed freight house located on just west of South Main on L Street in Randolph, Vermont. The station is served by AMTRAK's Vermonter service. The station's platform is owned and managed by NECR. The historic headhouse is located across the tracks and is owned by the Randolph Depot Restaurant. Pictures 4.33 (shows the restaurant) and 4.34 show the station and platforms and Figure 4.13 highlights the population density of the surrounding area.

The station has a single platform and track and historic headhouse with a waiting room, and restrooms; however the station does not provide ticketing or baggage services. The station facilities meet ADA accessibility requirements. Parking is provided by Depot Square Partners including ADA accessible parking spaces. Bus service is provided by Stagecoach Transportation Services, Inc., which uses the station as a hub for bus transportation in the region and administrative offices. The station is located 3.4 miles from Exit 4 on Interstate 89 via Vermont State Route 66.

The station is located near historic Randolph town center, with local commercial, civic, and cultural amenities. The surrounding district is pedestrian friendly and the station is accessible to pedestrians.



Pictures 4.33 and 4.34: Randolph Station Historic Headhouse and new Platform to the left of the tracks (maps.google.com)

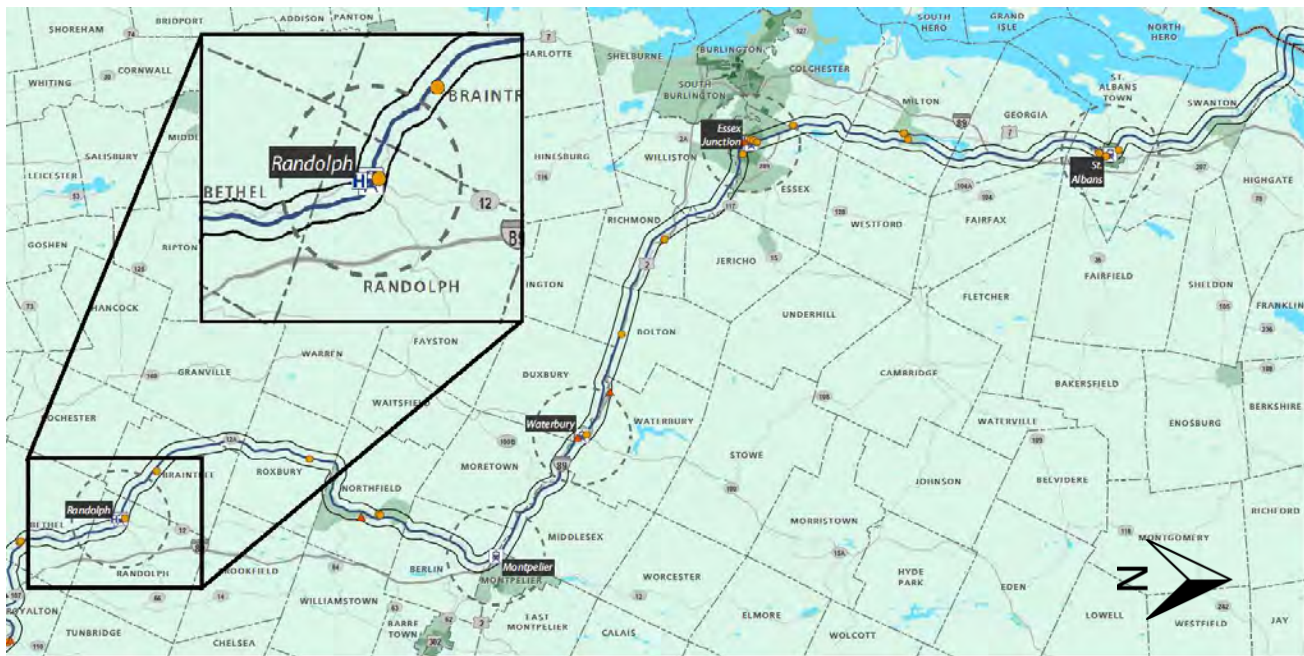


Figure 4.13: Randolph Location

See the Photograph Appendix for additional pictures of the station and surrounding site.

4.1.17 Montpelier Station, Montpelier, Vermont

Montpelier Station is a passenger rail station located near the intersection of Junction and Short Roads in Montpelier, Vermont. The station is served by AMTRAK's Vermonter service and is owned and managed by NECR. Pictures 4.35 and 4.36 show the station and platforms and Figure 4.14 highlights the population density of the surrounding area.

The station has a single platform and historic headhouse with a waiting room and restrooms; however the station does not provide ticketing or baggage services. The station has two tracks and an additional two north of the headhouse. According to Amtrak's website, the station does not meet ADA requirements. Parking is provided at the station at an NECR owned lot. No connecting bus service is currently provided at the station. Facilities specifically for bicycles do not appear available; however a 2 mile long bike path provides a connection from the station to downtown Montpelier. The station is located 1.5 miles from Exit 8 on Interstate 89 via local city streets.

The station is located in a rural area west of central Montpelier. Some residences and commercial industrial facilities are located near the station.



Pictures 4.35 and 4.36: Montpelier Station Headhouse and Platform

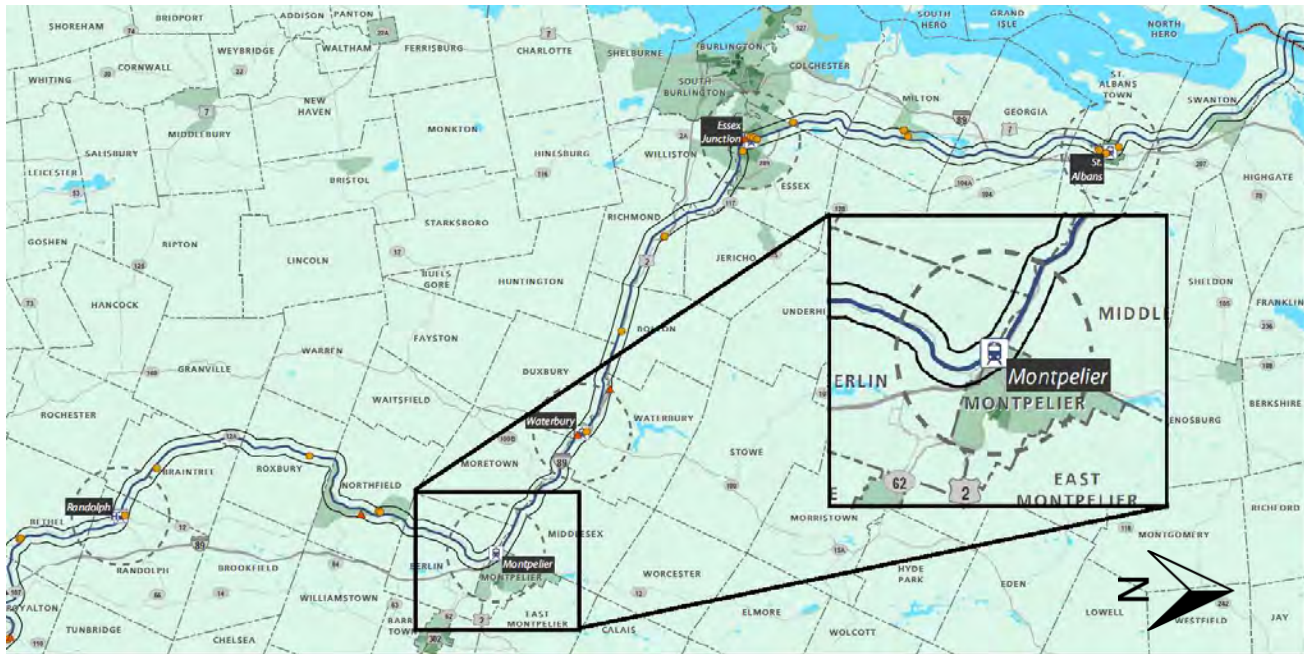


Figure 4.14: Montpelier Location

See the Photograph Appendix for additional pictures of the station and surrounding site.

4.1.18 Waterbury Station, Waterbury, Vermont

Waterbury Station is a passenger rail station located on US Highway 2 and Route 100 in Waterbury, Vermont. The station is served by AMTRAK's Vermonter service and is owned and managed by Revitalizing Waterbury, Inc. Pictures 4.37 and 4.38 show the station and platforms and Figure 4.15 highlights the population density of the surrounding area.

The station has a single platform, single track, and historic headhouse with a waiting room, visitor center, cafe and restrooms; however the station does not provide ticketing or baggage services. Parking is provided at the station at a Revitalizing Waterbury owned lot; the lot includes ADA accessible spaces. Local commuter bus service to the station is provided by Green Mount Transit Agency with services to Stowe and Montpelier. The station is 1.5 miles from Exit 10 on Interstate 89 via Route 100.

The station is located near historic Waterbury town center, with local commercial, civic, and cultural amenities. The surrounding district is pedestrian friendly and the station is easily accessible to pedestrians.



Pictures 4.37 and 4.38: Waterbury Station Headhouse and Platform

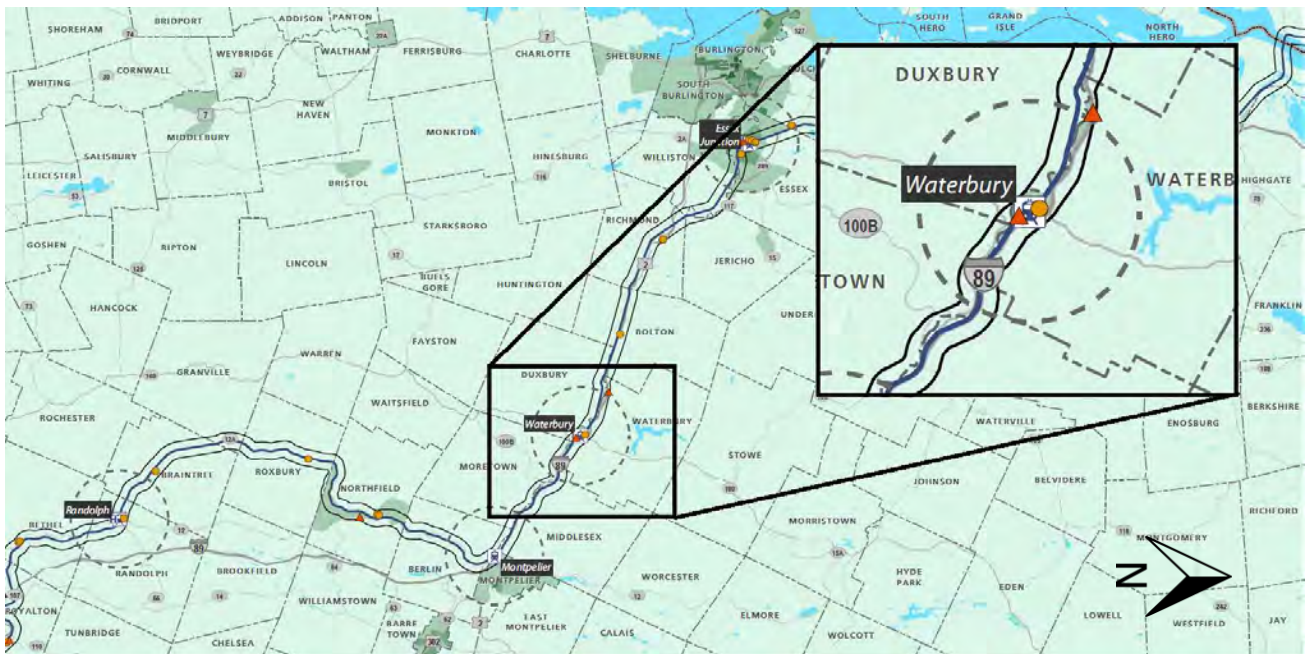


Figure 4.15: Waterbury Location

See the Photograph Appendix for additional pictures of the station and surrounding site.

4.1.19 Essex Junction-Burlington, Essex, Vermont

Essex Junction-Burlington Station is a passenger rail station located on Railroad Avenue in Essex, Vermont, 10 miles east of central Burlington. The station is served by AMTRAK's Vermonter. The

station is owned and maintained by NECR. Pictures 4.39 and 4.40 show the station and platforms and Figure 4.16 highlights the population density of the surrounding area.

The station has a single platform, single track, and headhouse with passenger waiting facilities, accessed from entrances on Railroad Avenue and Central Street. The station does not meet ADA accessibility requirements according to AMTRAK's ADA standards. The station features bicycle parking and has an eight space vehicle parking lot owned and managed NECR; none of the spaces are designated ADA accessible. Essex Junction-Burlington Station is 7 miles from Exit 16 on Interstates 89. The station is also proximate to Burlington International Airport; no direct shuttle or local bus service is offered between the station and airport. Local bus service operates near the station through the Chittenden County Transportation Authority and intercity bus service is operated nearby by Greyhound.

Essex Junction-Burlington Station is located in a suburban town center, with a mix of commercial, institutional, and residential buildings. The station serves as the primary intercity rail station for the Burlington region, Vermont's largest metropolitan area.

Through AMTRAK's Accessible Stations Development Plan, steps have been proposed to address and rectify any non-ADA compliance issues, such as level boarding of disabled persons. The surrounding district is pedestrian friendly and the station is easily accessible to pedestrians.



Pictures 4.39 and 4.40: Essex Junction Station Headhouse and Platform

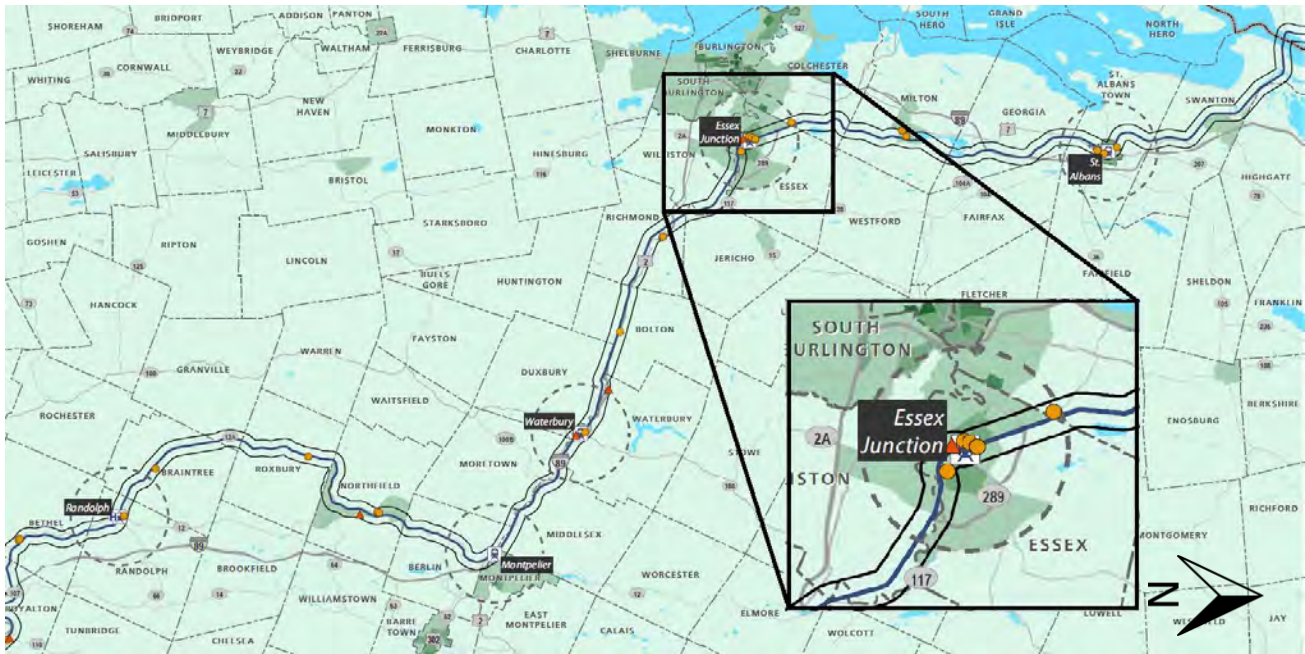


Figure 4.16: Essex Junction Location

See the Photograph Appendix for additional pictures of the station and surrounding site.

4.1.20 St. Albans Station, St. Albans, Vermont

St. Albans Station is a passenger rail station located on Federal Street in St. Albans, Vermont. St. Albans Station features an enclosed passenger waiting room but no ticketing or baggage services. The station has a single track and platform. The station is the northern terminus of AMTRAK's Vermonter service and also offers connections to local bus lines served by the Green Mountain Transit Agency and the Chittenden County Transportation Authority. The station offers 14 parking, with no dedicated accessible spaces. According to AMTRAK's website, the station platform and access to trains meet ADA accessibility requirements but enclosed passenger waiting areas do not. The station is owned and maintained by NECR. The station is 2.1 miles from Exit 19 on Interstate 89 via U.S. and State highways.

The station is located near historic St. Albans town center, with local commercial, civic, and cultural amenities. The surrounding district is pedestrian friendly and the station is easily accessible to pedestrians. Pictures 4.41 and 4.42 show the station and platforms and Figure 4.17 highlights the population density of the surrounding area.



Pictures 4.41 and 4.42: St. Albans Station Headhouse and Platform

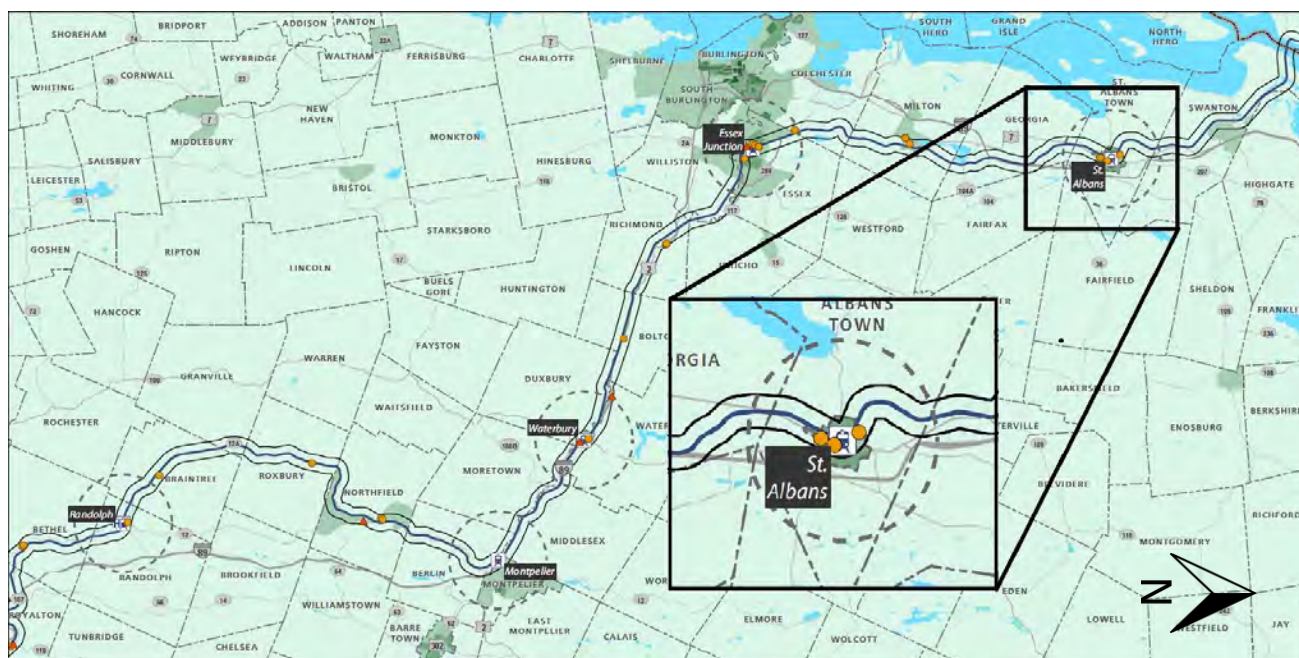


Figure 4.17: St. Albans Location

See the Photograph Appendix for additional pictures of the station and surrounding site.

4.1.21 Saint Lambert Station (Gare Saint-Lambert), Saint Lambert, Quebec

Saint Lambert Station (FR: Gare Saint-Lambert) is a passenger rail station located on St. Dennis Avenue in St. Lambert, Quebec. The station is served by Via Rail's Montreal–Quebec City, Ocean and Montreal – Gaspé Lines, AMTRAK's Adirondack Line, and AMT's Mont-Saint-Hilaire Line commuter rail. Pictures 4.43 and 4.44 show the station and platforms.

Saint Lambert Station has two low-level platforms with access via the station's parking lot from Price Author and St. Lawrence Streets and a stairway leading from Victoria Avenue. According to AMTRAK's website the station does not meet AMTRAK's standards for ADA compliance. The station has a ten space parking lot owned and managed by AMT with some spaces designated for disabled passengers. Local AMT bus routes stop at the station and the station is approximately 1.2 miles to nearby exit 79 on the Quebec Autoroute (Expressway) 20 and 0.8 miles from the Victoria Bridge; Victoria Bridge is a primary rail and vehicular link between the Island of Montreal and communities on the South Shore of the St. Lawrence River.

The station is located in a medium-density suburban residential and commercial district. The surrounding district is pedestrian friendly and the station is easily accessible to pedestrians.

Future plans call for AMTRAK to eliminate Saint Lambert as a station stop. A proposal by the U.S. Immigration and Customs Enforcement would have a pre-clearance customs and immigration in Montreal (Central Station), with all trains operating express to the United States border. While a final agreement between the U.S. and Canada has not been finalized and no timetable has been established for implementation, for purposes of the NNEIRI study it is assumed passengers will be cleared through security at Montreal and trains will run to the U.S. border without stopping.



Pictures 4.43 and 4.44: St. Lambert Station Approaches (maps.google.com)

See the Photograph Appendix for additional pictures of the station and surrounding site.

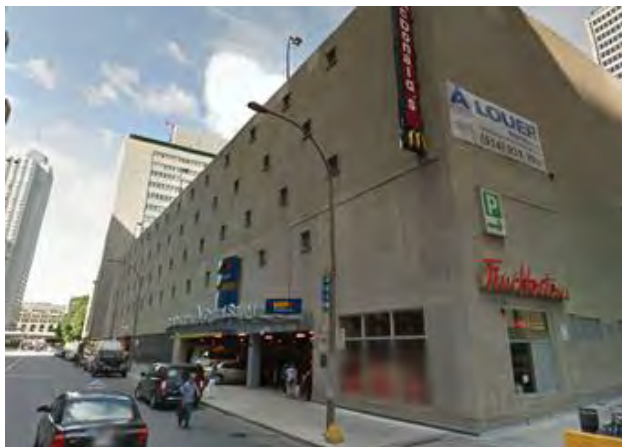
4.1.22 Central Station (Gare Centrale), Montreal, Quebec

Central Station (FR: Gare Centrale) is located on West Gauchetiere Street in central Montreal, Quebec. The station is Montreal's primary intercity rail station, with both VIA Rail and AMTRAK service. Additionally, AMT regional commuter rail trains operate from the station. Central Station is owned and operated by Homburg Investments, Inc. Pictures 4.45 and 4.46 show the station and platforms and Figure 4.18 highlights the population density of the surrounding area.

Central Station has seven below grade high-level island platforms with access from the main train hall from stairways, escalators, and elevators. The station features 280 parking spaces, some of which are designated for disabled passengers, and are owned and managed by the Homburg Investments. The station does not have bicycle parking available. Central Station has connections to Montreal Metro rapid transit services and local buses. The station is located approximately one mile from exit 4 on the Ville-Marie Expressway (Autoroute 720); 0.5 miles from the terminus of the Bonaventure Expressway (Autoroute 10); 2.2 miles from the western end Victoria Bridge and; 3.3 miles from the western end of the Champlain Bridge.

Central Station is located in the heart of downtown Montreal, with numerous commercial, government, residential, and instructional facilities in close proximity, including the Bell Center, Mary Queen of the World Cathedral, McGill University, and headquarters of CN. The surrounding district is pedestrian friendly and the station is easily accessible to pedestrians.

Future plans call for the U.S. Department of Homeland Security and Canadian Border Services Administration to establish a pre-clearance customs and immigration in Central Station. The facility would be used to screen passengers traveling to and from the United States with all trains departing and arriving from Central Station and operating without stops between the border and Montreal. While a preclearance agreement between the U.S. and Canada has not been finalized and no timetable has been established for implementation of this facility, for purposes of the NNEIRI study it is assumed passengers will be cleared through security at Montreal and trains will run to the U.S. border without stopping.



Pictures 4.45 and 4.46: Montreal Central Station Headhouse and Main Concourse (maps.google.com)

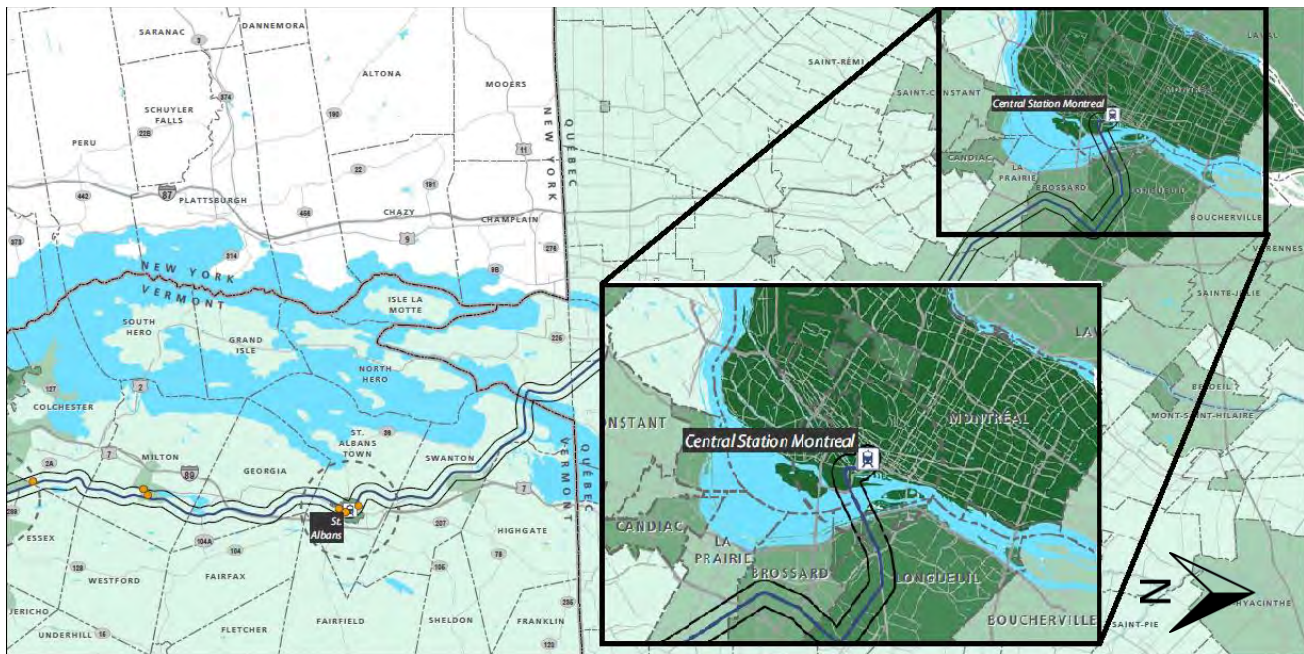


Figure 4.18: Montreal (Central Station) Location

See the Photograph Appendix for additional pictures of the station and surrounding site.

4.1.23 Windsor Locks Station, Windsor Locks, Connecticut

Windsor Locks Station is passenger rail station on South Main Street in Windsor Locks, Connecticut. The station is served by AMTRAK's Vermonter, New Haven to Springfield Shuttle, and Northeast Regional and is a future stop on the NHHS commuter rail line. Pictures 4.47 and 4.48 show the station and platforms and Figure 4.19 highlights the population density of the surrounding area.

The station includes a bus berth, parking lot, and single track with platform. The platform is primarily low-level but includes a small high-level segment. The station meets requirements for ADA accessibility. There are no significant structures on site except for a small pumping station. The station is served by local bus transit connections, including a connection to Bradley International Airport.

The surrounding district is low density with a few residential structures in close proximity. Safe pedestrian access to the station is nearly impossible as surrounding roads do not have sidewalks. AMTRAK owns the station and adjacent parking areas.

CTDOT is planning to re-design the station to include two tracks and two 500 foot side platforms. The redesigned station will include an elevator and stair overpass structure and will meet all ADA accessibility requirements. The re-design will also include a pickup and drop off space, a bus drop off area, bicycle parking, and additional vehicular parking. Access to the station from Interstate 91's Exits 39-41, located 1.3 miles away, is possible via Connecticut State Route 159.



Pictures 4.47 and 4.48: Windsor Locks Station Platform

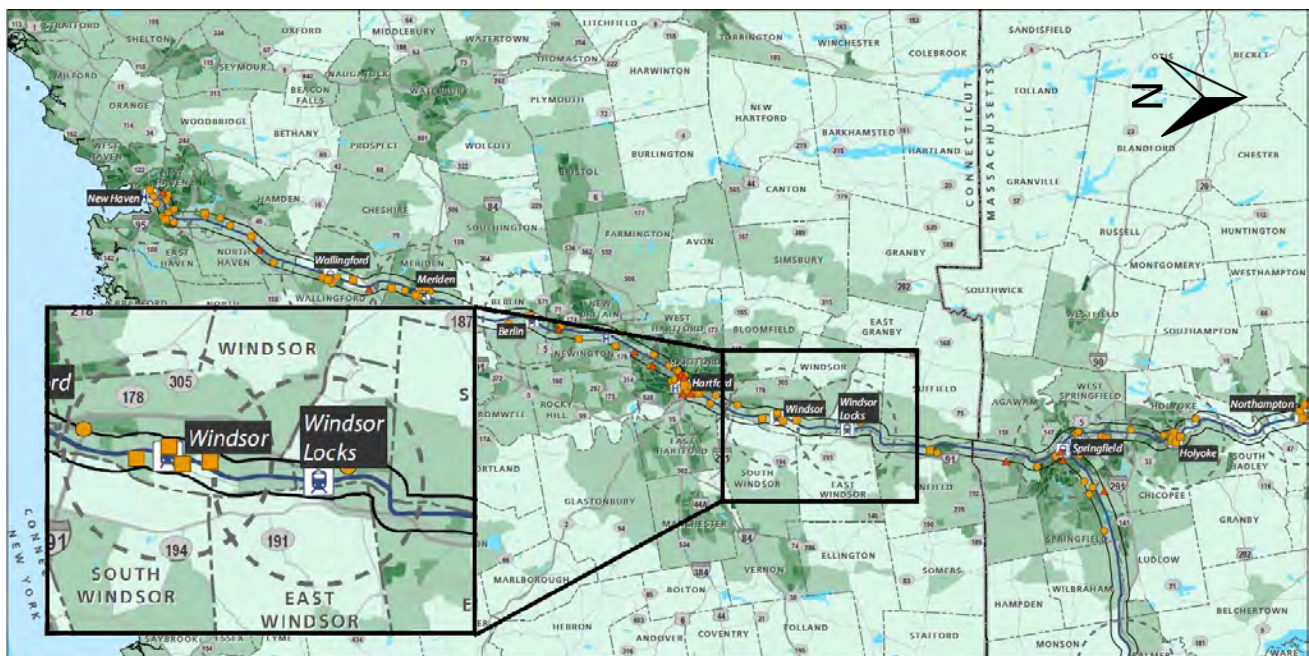


Figure 4.19: Windsor and Windsor Locks Locations

See the Photograph Appendix for additional pictures of the station and surrounding site.

4.1.24 Windsor Station, Windsor, Connecticut

Windsor Station is a passenger rail station on Central and Union Streets in Windsor, Connecticut. The station is served by AMTRAK's Vermonter, New Haven to Springfield Shuttle, and Northeast

Regional and is a future stop on the NHHS commuter rail line. AMTRAK owns the platforms and operates the station; the Town of Windsor owns the historic station headhouse. Currently, the station does not meet ADA accessibility requirements. Pictures 4.49 and 4.50 show the station and platforms and Figure 4.19 highlights the population density of the surrounding area.

Currently, the station includes a bus berth, historic headhouse and waiting area, low-level platform, and a single track. The station has onsite bicycle vehicle parking with designated accessible spaces. Access to the station from Interstate 91's Exit 37, located 1.5 miles away, is possible via Connecticut State Route 305. Local CT Transit bus connections operate from the station.

The surrounding district is a medium density commercial and residential district. The surrounding district is pedestrian friendly and the station is easily accessible to pedestrians.

CTDOT is planning to redesign the station to include two tracks and two 500 foot platforms on a site immediately south of the existing station. The redesigned station will include overpass structure and will meet all ADA accessibility requirements. The re-design will also include a pickup and drop off space, a bus drop off area, bicycle parking, and additional vehicular parking.



Pictures 4.49 and 4.50: Windsor Station Headhouse and Platform

See the Photograph Appendix for additional pictures of the station and surrounding site.

4.1.25 Union Station, Hartford, Connecticut

Union Station is a passenger rail station located on Asylum Avenue in downtown Hartford, Connecticut. The station is served by AMTRAK's Vermonter, New Haven to Springfield Shuttle, and Northeast Regional and is a future stop on the NHHS commuter rail line. The station is owned and operated the Greater Hartford Transit District. The station meets ADA requirements. Pictures 4.51 and 4.52 show the station and platforms and Figure 4.20 highlights the population density of the surrounding area.

Union Station currently has a single platform and track in service on an elevated structure. There is additional abandoned track support infrastructure onsite. The station features a large headhouse with passenger waiting and ticketing areas, retail and food vendors, and public safety facilities.

Entrances on Spruce Street, Asylum Avenue, and Union Place provide pedestrian access. A large bus terminal is located on Spruce Street with intercity and local bus service. The station does not have onsite parking but public parking garages are located in close proximity. The station is immediately adjacent to Interstate 84, located 0.4 miles from Exit 48, and proximate to Interstate 91, located 1.3 miles from Exit 29A.

The station is located in Hartford's dense downtown district, with significant commercial, government, residential, and institutional buildings in close proximity, including the Connecticut State Capitol, Trinity College, and the XL Center. The surrounding district is pedestrian friendly and the station is easily accessible to pedestrians.

CTDOT has plans to restore a second track and platform at Union Station to accommodate the introduction of the NHHS commuter rail service. Additionally, CTfastrak (previously the Hartford-New Britain Busway) is expected to begin service in 2015 from Union Station.



Pictures 4.51 and 4.52: Hartford Union Station West Entrance and Intercity Bus Stop and Station Platform

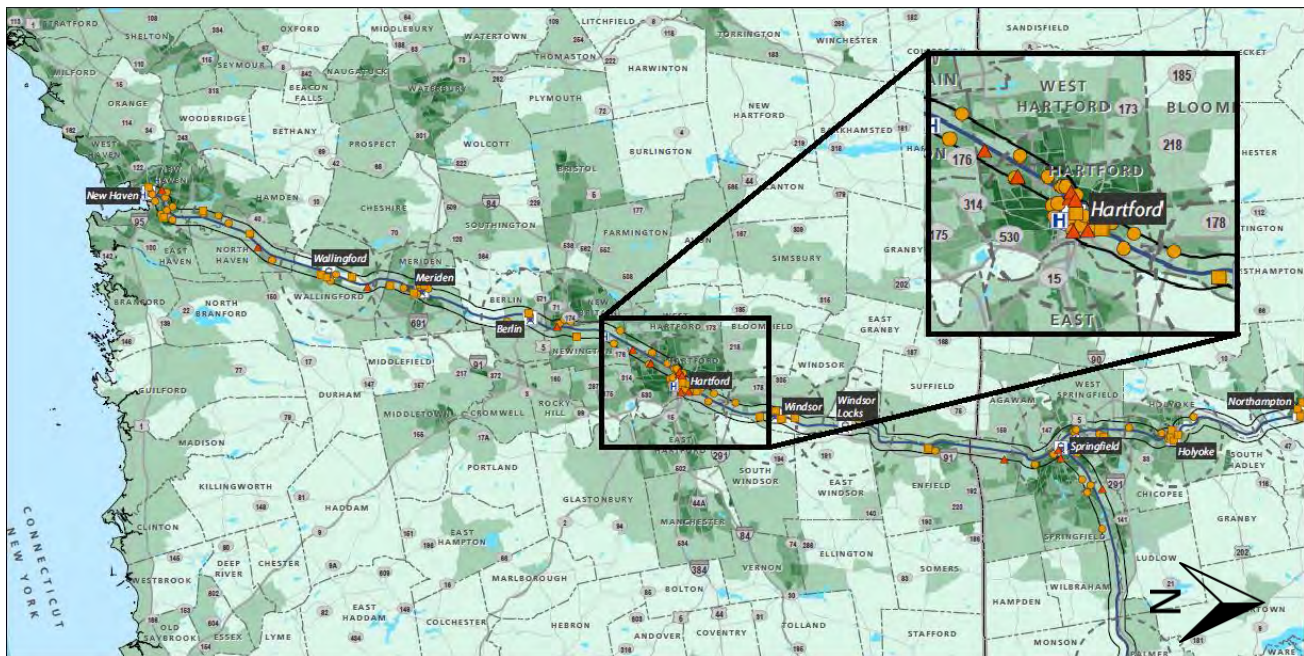


Figure 5.20: Hartford Union Station Location

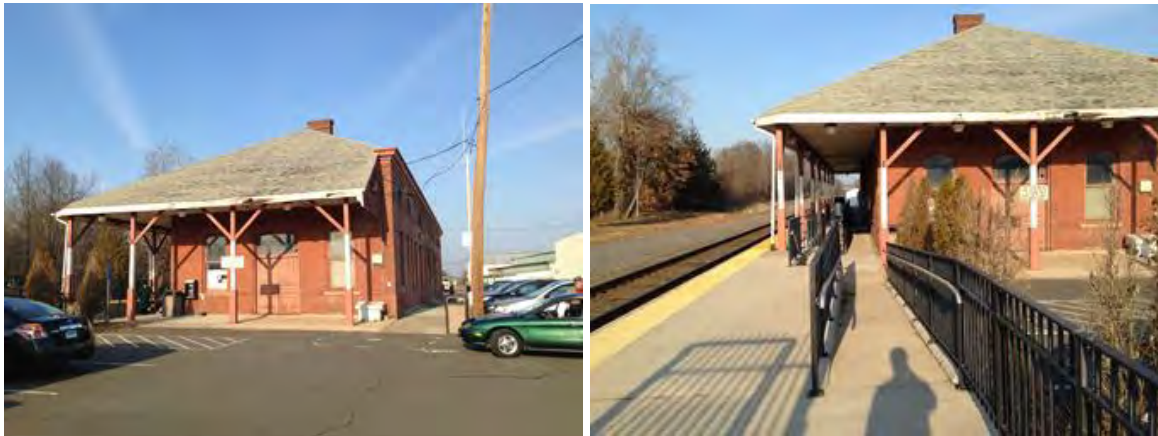
See the Photograph Appendix for additional pictures of the station and surrounding site.

4.1.26 Berlin Station, Berlin, Connecticut

Berlin Station, also known as Kennington-Berlin Station, is passenger rail station on Depot Street in Kensington, Connecticut. The station is served by AMTRAK's Vermonter, New Haven to Springfield Shuttle, and Northeast Regional and is a future stop on the NHHS commuter rail line. AMTRAK owns and operates the station. Pictures 4.53 and 4.54 show the station and platforms and Figure 4.21 highlights the population density of the surrounding area.

Currently, the station includes a single high-level platform and historic headhouse with passenger waiting area. One track is currently in use; however, a second abandoned track is also adjacent to the station. The station meets guidelines for ADA accessibility. Seventy five vehicle parking spaces are available on site, with five parking spaces designated as ADA accessible. Pedestrian access to the station is limited due to the lack of sidewalks on Depot Avenue. The station is located 4.8 miles from Interstate 84's Exit 7 and 1.0 miles from nearby Connecticut State Route 9, Exit 23 via local city streets. The surrounding area is a medium density suburban commercial and residential district.

CTDOT is planning to redesign the station to include two tracks and two side platforms on a site of the existing station. The redesigned station will include an elevator and stair overpass structure and will meet all ADA accessibility requirements. The station redevelopment will also include a pickup and drop off space, a bus berth, bicycle parking, and additional vehicular parking. The historic headhouse will be maintained in the new station complex.



Pictures 4.53 and 4.54: Berlin Station Headhouse, Parking, and Platform

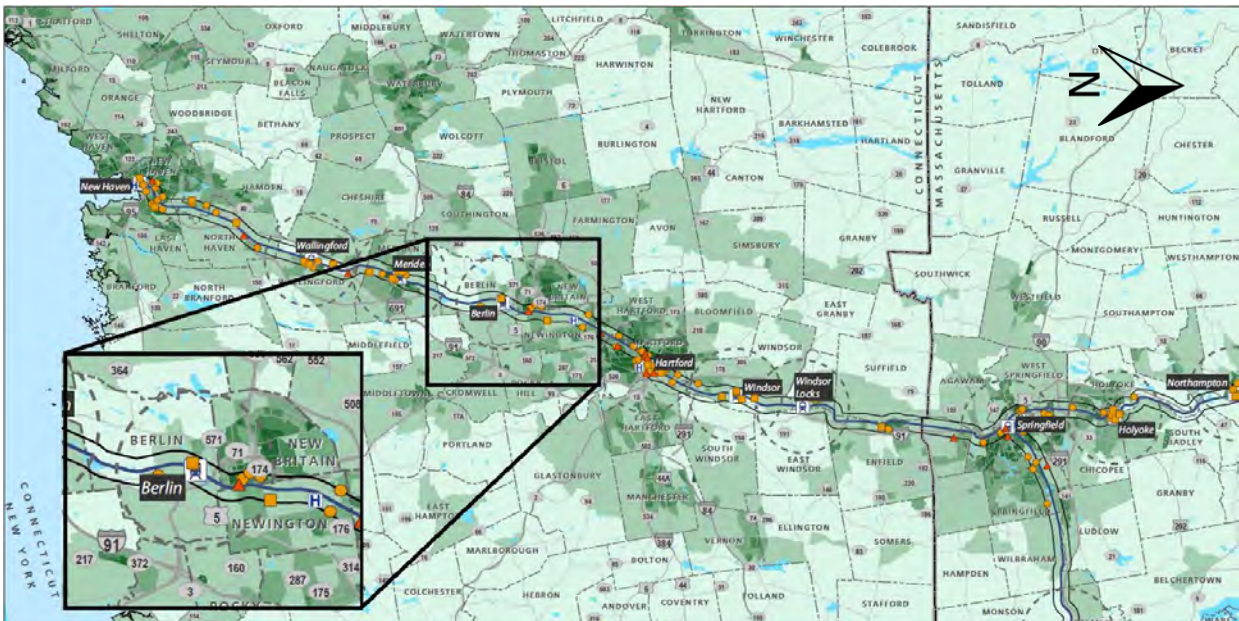


Figure 4.21: Berlin Location

See the Photograph Appendix for additional pictures of the station and surrounding site.

4.1.27 Meriden Station, Meriden, Connecticut

Meriden Station is passenger rail station on State Street in Meriden, Connecticut. The station is served by AMTRAK's Vermonter, New Haven to Springfield Shuttle, and Northeast Regional and is a future stop on the NHHS commuter rail line. AMTRAK owns and operates the station platforms and the City of Meriden owns the headhouse. Pictures 4.55 and 4.56 show the station and platforms and Figure 4.22 highlights the population density of the surrounding area.

Currently, the station includes a single low-level platform, two tracks, and headhouse with passenger waiting area. The station meets ADA accessibility requirements. A short-term vehicle parking lot, owned by the City of Meriden, is located at the station, with some parking spaces designated as ADA accessible. Pedestrian access to the station is possible from State Street. Frequent local CT Transit and Middletown Area Transit buses serve the station. The station is located approximately 2.5 miles from Interstate 91's Exit 17; 1.1 miles from Interstate 691's Exit 8 and; 2.3 miles from Connecticut State Route 15's Exit 67W, all accessible via local city streets.

The surrounding district is a medium density suburban commercial and residential district town center. The surrounding district is pedestrian friendly and the station is easily accessible to pedestrians.

CTDOT is planning to redesign the station to include two tracks and two side platforms on a site directly north of the existing station site. The redeveloped station will include an elevator and stair overpass structure and will meet all ADA accessibility requirements. The redesign will also include a pickup and drop off space, a bus berth, bicycle parking, and additional vehicular parking.



Pictures 4.55 and 4.56: Meriden Station Headhouse, Parking, and Platform



Figure 4.22: Meriden and Wallingford Locations

See the Photograph Appendix for additional pictures of the station and surrounding site.

4.1.28 Wallingford Station, Wallingford, Connecticut

Wallingford Station is a passenger rail station in on Hall Avenue in Wallingford, Connecticut. The station is served by AMTRAK's Vermonter, New Haven to Springfield Shuttle, and Northeast Regional and is a future stop on the NHHS commuter rail line. The station is owned and operated by AMTRAK. Pictures 4.57 and 4.58 show the station and platforms and Figure 4.22 highlights the population density of the surrounding area.

Wallingford Station features a single low-level platform and a single track. The original station building is currently used by the Wallingford Adult Education and the New Haven Society of Model Engineers Railroad Club. The station meets AMTRAK's ADA accessibility standards. Pedestrian access to the station is from nearby streets and the adjacent parking lot. CT Transit buses serve the surrounding community.

Wallingford Station is located in a suburban town center with commercial, residential, government, and institutional facilities in close proximity. The surrounding district is pedestrian friendly and the station is easily accessible to pedestrians. Wallingford is under a mile from Exit 64 on CT-15 Route.

CTDOT has plans to renovate the station to include a covered passenger waiting areas and an elevated pedestrian bridge with fully accessible elevators and two high-level platforms.

See the Photograph Appendix for additional pictures of the station and surrounding site.



Pictures 4.57 and 4.58: Meriden Station Headhouse, Parking, and Platform

4.1.29 Union Station, New Haven, Connecticut

Union Station is a passenger rail station on Union Avenue in the downtown section of New Haven, Connecticut. The station is served by Shore Line East, Metro North, and AMTRAK's Acela, New Haven-Springfield Shuttle, Northeast Regional, and Vermonter, and is future on the NHHS commuter rail. Union Station is owned and operated by the CTDOT. The station is owned and operated by AMTRAK. Pictures 4.59 and 4.60 show the station and platforms and Figure 4.23 highlights the population density of the surrounding area.

Union Station has four high-level island platforms and is fully ADA accessible, primarily through elevator access to high-level platforms. New Haven has seven tracks and an adjacent yard. An underground tunnel from the station headhouse is used to facilitate access to the platforms; the headhouse includes a large passenger waiting area, retail and food vendors, and public safety facilities. The station has a 600 car parking garage, with spaces designated for ADA accessibility, and onsite bicycle parking; the parking garage is owned CTDOT and operated by the New Haven Parking Authority.

Local CT Transit buses and private shuttle buses from nearby institutions serve the station. The station is readily accessible to pedestrians from the main entrance on Union Street. The station is located approximately 1.5 miles from Exit 47 on Interstate 95 and 1.3 miles from Exit 1 on Interstate 91.

Union Station is located near New Haven's central business district, with numerous residential, commercial, government, and institutional buildings in close proximity, including Yale University. The surrounding district is pedestrian friendly and the station is easily accessible to pedestrians.



Pictures 4.59 and 4.60: New Haven Union Station Headhouse and Platform

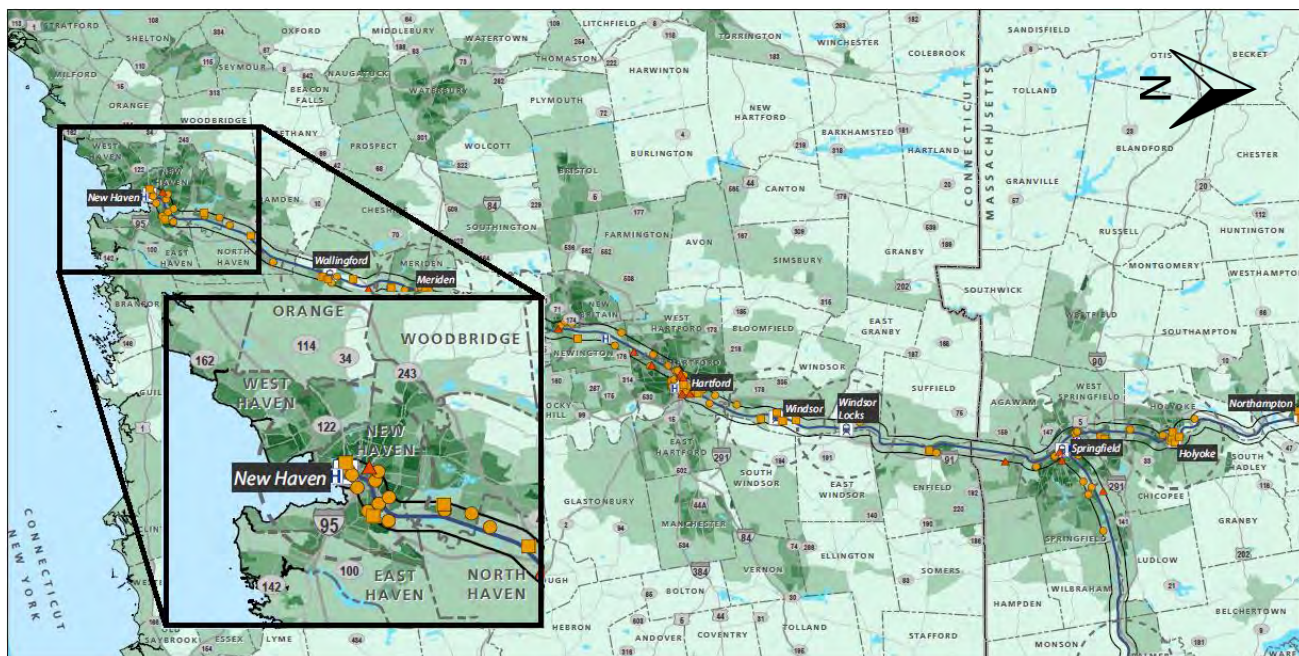


Figure 4.23: New Haven Union Station Location

See the Photograph Appendix for additional pictures of the station and surrounding site.

5 CRITERIA FOR STATION LOCATIONS

5.1 STATION RATING CRITERIA

Station sites to be served by the NNEIRI service will be evaluated using objective criteria based on site-specific conditions and precedence set by other intercity rail services in the Northeast. Principal station site criteria include:

- Presence of existing station or feasible conditions for building a station
- Population density and economic activity
- Intermodal connections
- Distance between station stops
- Ridership

Defined criteria enable a thorough analysis of all existing and proposed stations and allow the assessment of station suitability for potential service on the Corridor. Sections 5.1.1 – 5.1.4 provides rationale for use of each criteria and the assessment of individual stations. Additionally, Section 5.2 includes the preliminary assessment of stations and station locations and provides an initial list of stations used in developing study alternatives. Appendix A includes an initial boardings forecast by station and the rationale used in the ridership assessment.

5.1.1 Presence of Existing Stations or Realistic Conditions for Building a Station

The use of existing stations is preferable to construction of a new station because of the presence of established facilities and existing integration into the local community. Use of existing stations would also facilitate system cost savings through the joint use of the station with other passenger rail services and would avoid construction impacts.

However, certain sites will provide opportunities for building new stations. Sites for new stations could include historic station sites or locations near complementary transportation services, such as a major highway interchange or transit hub. New station sites will be evaluated on a case-by-case basis to ensure stations are environmentally and economically feasible and have support from the local community. Table 5.1 profiles proposed and existing stations and the initial assessment of feasibility of service at each site; for specific details see the Station Specific Analysis in Section 5.2. Note that existing stations were all considered initially feasible unless there was a major issue at a location as noted in table 5.1.

Table 5.1 Station Site Feasibility

Station	Existing Station	Feasible Site for NNEIRI Service
Boston, MA (South Station)	Yes	Yes
Boston, MA (Back Bay)	Yes	Yes
Weston, MA (Weston Tolls/Route 128)	No	No: Site unfeasible for service due to financial and environmental reasons
Framingham, MA	Yes	Yes
Worcester, MA (Union Station)	Yes	Yes
Palmer, MA	No	TBD: The site potentially poses rail operational challenges that require further study
Springfield, MA (Union Station)	Yes	Yes
Holyoke, MA	No	Yes: Site selected for future Knowledge Corridor Rail Service
Northampton, MA	No	Yes: Site selected for future Knowledge Corridor Rail Service
Greenfield, MA	No	Yes: Site selected for future Knowledge Corridor Rail Service
Brattleboro, VT	Yes	Yes
Bellows Falls, VT	Yes	Yes
Claremont, NH	Yes	Yes
Windsor, VT	Yes	Yes
White River Junction, VT	Yes	Yes
Randolph, VT	Yes	Yes
Montpelier, VT	Yes	Yes

Station	Existing Station	Feasible Site for NNEIRI Service
Waterbury, VT	Yes	Yes
Burlington, VT (Essex Junction)	Yes	Yes
St. Albans, VT	Yes	Yes
St. Lambert, QC	Yes	No: Due to proposed U.S. Customs and Immigrations changes, Central Station will be the only feasible station site in Canada.
Montreal, QC (Central Station)	Yes	Yes
Windsor Locks, CT	Yes	Yes
Windsor, CT	Yes	Yes
Hartford, CT (Union Station)	Yes	Yes
Berlin, CT	Yes	Yes
Meriden, CT	Yes	Yes
Wallingford, CT	Yes	Yes
New Haven, CT (Union Station)	Yes	Yes

5.1.2 Population Density and Economic Activity

Population density and economic activity will serve as key drivers of future NNEIRI ridership. Both characteristics provide a key source of potential riders for NNEIRI service and indicate centers of economic activity. Economic centers are indicated by large concentrations of commercial, institutional, tourist, or industrial activity. This criterion provides consideration of a station in a regional area that has potential to generate specific ridership opportunities.

To assist with comparison of stations, population density within three miles of a station was analyzed to serve as a proxy for the relative area development around each station. The actual capture area for the purposes of ridership was done at a metropolitan and regional level of sensitivity. Thus, by comparing the proportion of total projected ridership of a station against the population density within the three mile area of a station, a higher number provides an indication that attraction for use of the station is more regionally than locally focused.

Table 5.2 highlights overall population and population density within three miles of proposed station sites. Maps 5.1 – 5.6 show station locations as they relate to population density within the Corridor.

Table 5.2: Three Mile Radius Population and Density

Station	Population	Density(Persons/SqMi)
Boston, MA (South Station)	373,687	13,216
Boston, MA (Back Bay)	474,845	16,794
Framingham, MA	73,820	2,611
Worcester, MA (Union Station)	151,927	5,373
Palmer, MA	11,313	400
Springfield, MA (Union Station)	136,540	4,829
Holyoke, MA	79,465	2,811
Northampton, MA	27,159	961
Greenfield, MA	21,795	771
Brattleboro, VT	11,459	405
Bellows Falls, VT	6,561	232
Claremont, NH	11,315	400
Windsor, VT	4,167	147
White River Junction, VT	13,143	465
Randolph, VT	2,819	100
Montpelier, VT	8,320	294
Waterbury, VT	3,432	121
Burlington, VT (Essex Junction)	24,279	859
St. Albans, VT	11,676	413
Montreal, QC (Central Station)	260,484	9,213
Windsor Locks, CT	25,108	888
Windsor, CT	25,979	919
Hartford, CT (Union Station)	162,694	5,754
Berlin, CT	58,595	2,072

Meriden, CT	63,306	2,239
Wallingford, CT	40,257	1,424
New Haven, CT (Union Station)	168,315	5,953

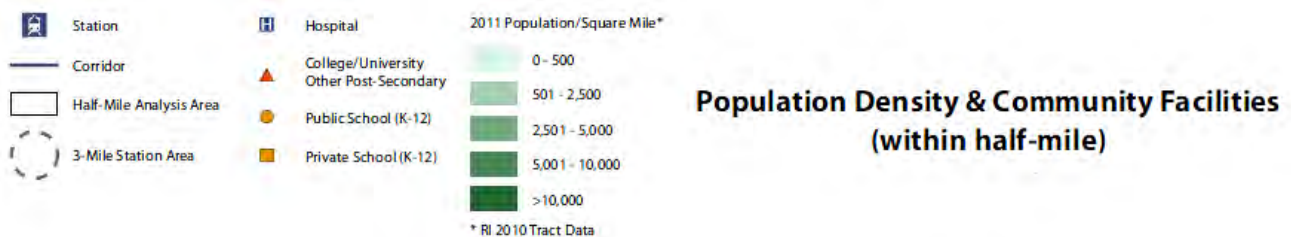
Source: Sources: ACS 2011 Block Group Data (CT, MA, NH, VT), Statistics Canada, 2011

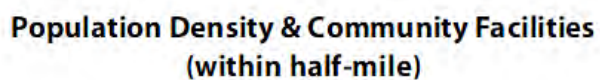
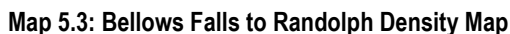


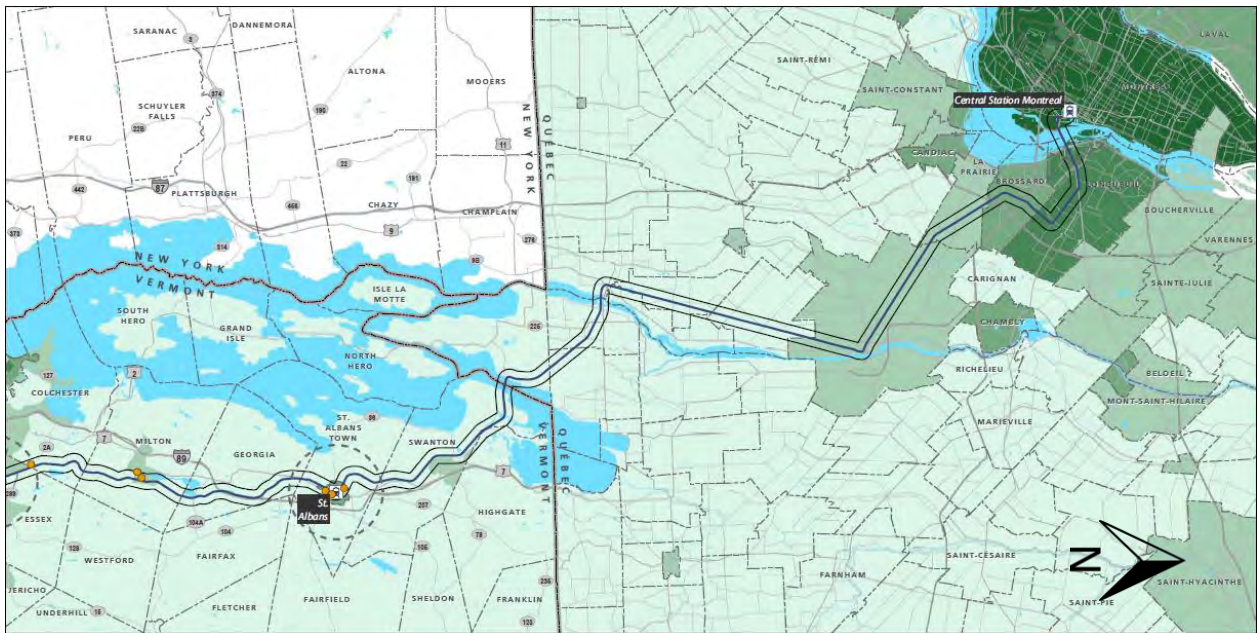
Map 5.1: Boston to Palmer Density Map



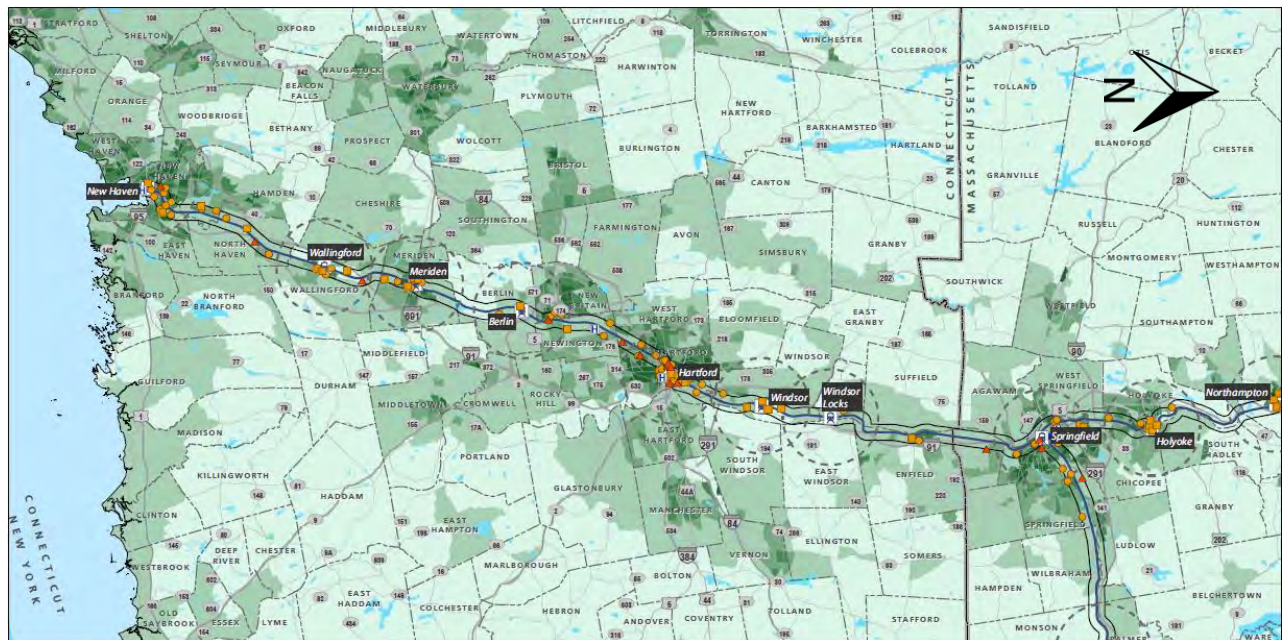
Map 5.2: Springfield to Bellows Falls Density Map



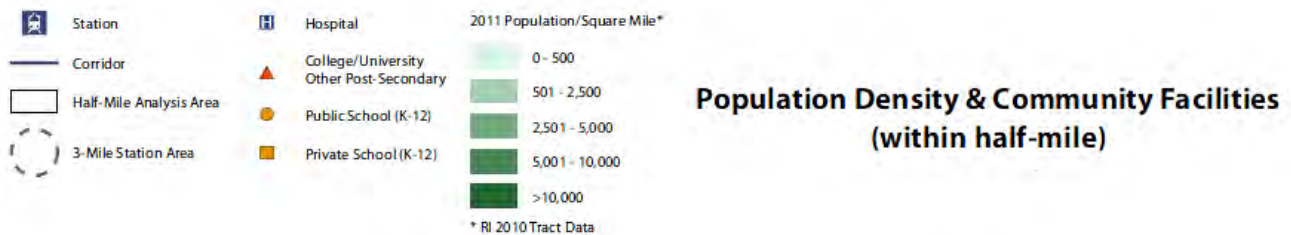




Map 5.5: St. Albans to Montreal Population Density Map



Map 5.6: Springfield to New Haven Density Map



5.1.3 Intermodal Connections

Stations should also be located in areas that maximize intermodal connections. The proximity of potential stations to rapid transit, intercity and commuter rail, local and intercity bus, major roadways, or airports will improve intermodal connection between travel modes and provide NNEIRI riders maximum mobility. For example, Springfield's Union Station provides regional connectivity to local and future intercity bus services, AMTRAK intercity services, future commuter rail, and regional highways, providing passengers access to points across western Massachusetts and the Connecticut River Valley.

Intermodal connections are defined as proximate if there is an on-station site connections or sites that provide a direct shuttle or other link. For example, Boston's Logan International Airport is considered an intermodal connection for South Station due to the direct connection provided by the Silver Line. However, Burlington International Airport is not considered an intermodal connection to Burlington (Essex Junction) Station because of the lack of direct connections. Connections to other intercity rail lines are only indicated where lines provide significantly different service than potential NNEIRI service. For example, Springfield Union Station has intercity rail connecting services due to AMTRAK's Lake Shore Limited Service, but not for its Vermonter or New Haven-Springfield Shuttle AMTRAK services. Interstate highways and regional roadways are considered proximate if within five miles of a station.

Intermodal connections are highlighted at all potential station sites in Table 5.2.

Table 5.2 Station Site Intermodal Connections

Station	Existing or Planned Intermodal Connections
Boston (South Station)	Intercity Rail Connecting Services, Rapid Transit, Commuter Rail, Interstate Highways, Intercity Bus, Local Bus, International Airport
Boston (Back Bay)	Intercity Rail Connecting Services, Rapid Transit, Commuter Rail, Interstate Highway, Intercity Bus, Local Bus
Weston Tolls/Route 128	Interstate Highways, Commuter Rail
Framingham	Commuter Rail, Interstate Highway
Worcester	Commuter Rail, Interstate Highway, Local Bus, Intercity Bus
Palmer	Interstate Highway, Local Bus
Springfield (Union Station)	Intercity Rail Connecting Services, Commuter Rail, Interstate Highway, Local Bus, Intercity Bus

Station	Existing or Planned Intermodal Connections
Holyoke	Interstate Highway, Local Bus
Northampton	Interstate Highway, Local Bus
Greenfield	Interstate Highway, Local Bus, Intercity Bus
Brattleboro	Interstate Highway, Local Bus, Intercity Bus
Bellows Falls	Interstate Highway, Local Bus
Claremont	Interstate Highway
Windsor, VT	Interstate Highway
White River Junction	Interstate Highway, Local Bus, Intercity Bus
Randolph	Interstate Highway, Local Bus
Montpelier	Interstate Highway
Waterbury	Interstate Highway, Local Bus, Intercity Bus
Burlington (Essex Junction)	Interstate Highway, Local Bus, Intercity Bus
St. Albans	Interstate Highway, Local Bus, Intercity Bus
St. Lambert	Intercity Rail Connecting Services, Commuter Rail, Interstate Highway equivalent, Local Bus, Intercity Bus
Montreal (Central Station)	Intercity Rail Connecting Services, Rapid Transit, Commuter Rail, Interstate Highway equivalent, Intercity Bus, Local Bus, International Airport
Windsor Locks	Commuter Rail, Interstate Highway, Local Bus, Intercity Bus
Windsor	Commuter Rail, Interstate Highway, Local Bus, Intercity Bus

Station	Existing or Planned Intermodal Connections
Hartford (Union Station)	Commuter Rail, Interstate Highway, Local Bus, Intercity Bus
Berlin	Commuter Rail, Interstate Highway, Local Bus, Intercity Bus
Meriden	Commuter Rail, Interstate Highway, Local Bus, Intercity Bus
Wallingford	Commuter Rail, Interstate Highway, Local Bus, Intercity Bus
New Haven (Union Station)	Intercity Rail Connecting Services, Commuter Rail, Interstate Highway, Local Bus, Intercity Bus

5.1.4 Distance between Station Stops

Adequate distance between stations should be provided to maximize average operating speed. Location of stations in close proximity to each other would be unreasonable for train operations except in instances where stations provide essential distribution for passengers in large urban areas.

The average distance between stations on existing intercity services on Northeast Corridor is approximately 18.5 miles. However, population density has a significant impact on distance between stations; only one mile exists between the densely populated corridor between Boston's Back Bay and South Station while there are 55 miles between Worcester (Union Station) and Springfield (Union Station), a more sparsely populated region. Additionally, the Springfield to New Haven segment of the Corridor will likely have a higher density of stations given the nature of Connecticut's mid-size cities and the Vermont segment will likely have a larger distance between stations given the state's more rural character. Establishing approximately 20 miles between stations as a target for a minimum distance for stations is sufficient distance for trains to operate at higher speeds while serving major metropolitan and population centers on the Corridor. Tables 5.3-5.5 provide a breakdown on distances between stations on the Corridor segments.

Table 5.3 Distances between Stations: Boston to Springfield (Miles)

Station	Boston (South Station)	Distance from Potential Previous Station	Distance from Springfield (Union Station)
Boston (South Station)	-	-	99
Boston (Back Bay)	1	1	98
Weston Tolls/Route 128	11	10	89
Framingham	21	10	76

Station	Boston (South Station)	Distance from Potential Previous Station	Distance from Springfield (Union Station)
Worcester	44	23	55
Palmer	84	40	15
Springfield (Union Station)	99	15	-

Table 5.4 Distances between Stations: Springfield to Montreal (Miles)

Station	Distance from Springfield (Union Station)	Distance from Potential Previous Station	Distance from Montreal (Central Station)
Springfield (Union Station)	-	-	309
Holyoke	7.5	7.5	300.5
Northampton	17.5	10	290.5
Greenfield	36	26	272
Brattleboro	50	24	258
Bellows Falls	64	14	244
Claremont	81	17	227
Windsor, VT	89	8	219
White River Junction	103	14	205
Randolph	135	32	173
Montpelier	165	30	143
Waterbury	173	8	135
Burlington (Essex Junction)	197	24	111
St. Albans	221	24	87
St. Lambert	304	83	4
Montreal (Central Station)	309	3	-

Table 5.5 Distances between Stations: Springfield to New Haven (Miles)

Station	Distance from Springfield (Union Station)	Distance from Potential Previous Station	Distance from New Haven (Union Station)
Springfield (Union Station)	-	-	63
Windsor Locks	15	15	47
Windsor	20	5	43
Hartford (Union Station)	26	6	37
Berlin	37	11	26
Meriden	44	7	18
Wallingford	50	6	13
New Haven (Union Station)	63	13	-

5.2 SUMMARY OF INITIAL STATION RECOMMENDATIONS

An initial assessment has been conducted based on the station rating criteria and the initial station boarding projections. Initial station assessments are based on consideration of the criteria developed to understand optimal locations for stations, including site feasibility, population density and economic activity, intermodal connections, and distance between station stops. However, further consideration will be made with ridership figures and public comments.

The assessment of station attributes and criteria reveal that all existing stations along the Corridor include attributes that are consistent with continued use for intercity service. Furthermore, the results of the initial ridership estimates revealed that the additional boardings that are achieved at the primary stations with an express service do not necessarily offset the loss of ridership gained at the local stations. This understanding of travel demand in the Corridor, coupled with the project Purpose to connect major New England cities with smaller cities and rural areas means that all feasible stations will continue to be part of the NNEIRI study. There are only two identified stations that are considered infeasible: a station in Weston, MA at I-95/Route 128 due to site constraints and at St. Lambert, QC due to customs limitations.

A summary of the NNEIRI Stations and their station criteria ratings are provided in Table 5.6. In addition to their station criteria ratings, a maximum annual boarding projection is included for 2020. This projection value represents the highest boarding projection from the seven service options that were evaluated to date. Actual projected boardings at each station will be compiled for each alternative once specific train service plans are developed.

The following sections provide a summary of each Corridor segment and the attributes and station categories that will be used in the further evaluation of study alternatives.

Table 5.6: Summary Northern New England Intercity Rail Initiative Stations

Station	Feasible Location for Station	Population (3 Mile Radius)	Intermodal Connections	Distance to:	Annual Boarding Projection (2020)
Boston, MA (South Station)	Yes	373,687	Intercity Rail Connecting Services, Rapid Transit, Commuter Rail, Interstate Highways, Intercity Bus, Local Bus, International Airport	Back Bay: 1 Mile	138,300
Boston, MA (Back Bay)	Yes	474,845	Intercity Rail Connecting Services, Rapid Transit, Commuter Rail, Interstate Highway, Intercity Bus, Local Bus	South Station: 1 Mile	52,800
Weston, MA (Weston Tolls/Route 128)	No: Site unfeasible for service due to cost and environmental reasons	NA	Interstate Highways, Commuter Rail	Boston: 11 Miles	N/A
Framingham, MA	Yes	73,820	Commuter Rail, Interstate Highway	Boston: 21 Miles Worcester: 22 Miles	27,900
Worcester, MA (Union Station)	Yes	151,927	Commuter Rail, Interstate Highway, Local Bus, Intercity Bus	Boston: 44 Miles Palmer: 40 Miles Springfield: 55 Miles	59,400
Palmer, MA	TBD: The site potentially poses rail operational challenges that require further study	11,313	Interstate Highway, Local Bus	Springfield: 15 Miles Worcester: 40 Miles	10,600
Springfield, MA (Union Station)	Yes	136,540	Intercity Rail Connecting Services, Commuter Rail, Interstate Highway, Local Bus, Intercity Bus	Worcester: 44 Miles Windsor Locks: 15 Miles Holyoke: 7.5 Miles	115,500

Station	Feasible Location for Station	Population (3 Mile Radius)	Intermodal Connections	Distance to:	Annual Boarding Projection (2020)
Holyoke, MA	Yes: Site selected for future Knowledge Corridor Rail Service	79,465	Interstate Highway, Local Bus	Springfield: 7.5 Miles Northampton: 10 Miles	69,600
Northampton, MA	Yes: Site selected for future Knowledge Corridor Rail Service	27,159	Interstate Highway, Local Bus	Springfield: 17.5 Miles	106,200
Greenfield, MA	Yes: Site selected for future Knowledge Corridor Rail Service	21,795	Interstate Highway, Local Bus, Intercity Bus	Springfield: 36 Miles	42,300
Brattleboro, VT	Yes	11,459	Interstate Highway, Local Bus, Intercity Bus	Springfield: 50 Miles	55,500
Bellows Falls, VT	Yes	6,561	Interstate Highway, Intercity Bus	Brattleboro: 14 Miles	12,500
Claremont, NH	Yes	11,315	Interstate Highway	White River Junction: 21 Miles	4,700
Windsor, VT	Yes	4,167	Interstate Highway	White River Junction: 14 Miles	3,800
White River Junction, VT	Yes	13,143	Interstate Highway, Local Bus, Intercity Bus	Springfield: 103 Miles	39,000

Station	Feasible Location for Station	Population (3 Mile Radius)	Intermodal Connections	Distance to:	Annual Boarding Projection (2020)
Randolph, VT	Yes	2,819	Interstate Highway	White River Junction: 32 Miles	5,900
Montpelier, VT	Yes	8,320	Interstate Highway	White River Junction: 63 Miles Waterbury: 8 Miles	11,700
Waterbury, VT	Yes	3,432	Interstate Highway, Local Bus, Intercity Bus	Burlington (Essex Junction): 22 Miles Montpelier: 8 Miles	11,100
Burlington, VT (Essex Junction)	Yes	24,279	Interstate Highway, Local Bus, Intercity Bus	Waterbury: 22 Miles White River Junction: 63 Miles Montreal: 111 Miles	39,100
St. Albans, VT	Yes	11,676	Interstate Highway, Local Bus, Intercity Bus	24 Miles to Burlington (Essex Junction) and 87 Miles to Montreal	6,600
St. Lambert, QC	No: Due to proposed U.S. Customs and Immigrations changes, Central Station will be the only feasible station site in Canada.	N/A	Intercity Rail Connecting Services, Commuter Rail, Interstate Highway equivalent, Local Bus, Intercity Bus	Montreal: 4 Miles St. Albans: 83 Miles	NA

Station	Feasible Location for Station	Population (3 Mile Radius)	Intermodal Connections	Distance to:	Annual Boarding Projection (2020)
Montreal, QC (Central Station)	Yes	260,484	Intercity Rail Connecting Services, Rapid Transit, Commuter Rail, Interstate Highway equivalent, Intercity Bus, Local Bus, International Airport	Burlington (Essex Junction): 111 Miles Springfield: 197 Miles	242,900
Windsor Locks, CT	Yes	25,108	Commuter Rail, Interstate Highway, Local Bus, Intercity Bus	Springfield: 15 Miles Hartford: 9 Miles	15,400
Windsor, CT	Yes	25,979	Commuter Rail, Interstate Highway, Local Bus, Intercity Bus	Springfield: 20 Miles Hartford: 6 Miles	15,600
Hartford, CT (Union Station)	Yes	162,694	Commuter Rail, Interstate Highway, Local Bus, Intercity Bus	Springfield: 26 Miles New Haven: 37 Miles	144,600
Berlin, CT	Yes	58,595	Commuter Rail, Interstate Highway, Local Bus, Intercity Bus	Hartford: 11 Miles New Haven: 37 Miles	13,500
Meriden, CT	Yes	63,306	Commuter Rail, Interstate Highway, Local Bus, Intercity Bus	Hartford: 18 Miles New Haven: 18 Miles	29,100
Wallingford, CT	Yes	40,257	Commuter Rail, Interstate Highway, Local Bus, Intercity Bus	Hartford: 24 Miles New Haven: 13 Miles	8,900
New Haven, CT (Union Station)	Yes	168,315	Intercity Rail Connecting Services, Commuter Rail, Interstate Highway, Local Bus, Intercity Bus	Springfield: 63 Miles Hartford: 37 Miles	158,600

5.2.1 Boston to Springfield

The Boston to Springfield segment contains three metropolitan areas that have existing and extensive passenger rail stations. These stations will form the backbone of the Massachusetts portion of NNEIRI service. Key station stops will include Boston (South Station and Back Bay), Worcester (Union Station), and Springfield (Union Station). The stations form the center of major population and economic clusters and are significantly far enough apart to allow for efficient intercity rail operations. A station in Palmer will require further study to identify the station and track configuration that will be necessary to effectively serve the station without significant impact to freight operations.

5.2.2 Springfield to Montreal

The Springfield to Montreal segment has two major metropolitan areas with many smaller cities and towns and rural areas on the 309 mile segment. Thus, apart from Montreal and Springfield, population densities and economic clusters will be smaller than other parts of the Corridor and stations spaced further apart. This Corridor segment will be anchored by two Urban Hub Stations at either end and will serve Urban Intermediate Stations at Northampton, White River Junction, and Burlington (Essex Junction). Holyoke, Greenfield, Brattleboro, Bellows Falls, Windsor, and Claremont are recommended for further evaluation to provide an intermediate stop between Springfield and White River Junction, a 103 mile gap. Waterbury and Montpelier are also recommended for further evaluation as a potential station serving central Vermont due to the 94 mile gap between White River Junction and Burlington (Essex Junction) stations. Additionally, St. Albans will be evaluated using potential ridership data. It should be noted that it is assumed existing intercity rail service (Vermont) will be maintained and not altered as a part of the NNEIRI service.

5.2.3 Springfield to New Haven

The Springfield to New Haven segment has three large metropolitan areas and several medium size cities. Thus, station stops on this segment of the Corridor will be more frequent than other segments of the Corridor to serve the large populations, economic clusters, and utilize existing intermodal connections. NNEIRI service will be developed in concert with plans for the New Haven-Hartford-Springfield Project.

5.2.4 Station Specific Recommendation Assessment

Analysis of each specific site details reasons for recommended stations based on criteria described in Sections 2, 3, and 5.

5.2.4.1 South Station

The size, location, and existing amenities of South Station make it particularly suited to serve as an Urban Hub Station and eastern terminal of the Corridor. The station is located in the heart of Boston's central business district and has a very high population density surrounding the site. South Station has excellent connections to AMTRAK, commuter rail, rapid transit, local buses, and intercity buses. The station is adjacent to the Interstates 90 and 93 interchange, providing excellent regional expressway connections. Additionally, the station is proximate to Boston's Logan

International Airport, with extensive national and international airline connections. MassDOT's extensive rehabilitation plans for South Station will further enhance the station's status of as a regional and national transportation hub.

5.2.4.2 Back Bay Station

The size, location, and existing amenities of Back Bay make it well suited to serve as an Urban Hub Station site on the Corridor. The station has existing AMTRAK waiting facilities, ticket counters, and connections to the MBTA's Orange Line and Commuter Rail system. Additionally, the station is located in a major business, residential, cultural, and entertainment hub. Despite close proximity to South Station, the service to the station is necessary to accommodate the large population and business cluster in Boston's Back Bay neighborhood.

5.2.4.3 Weston Tolls/Route 128 Site

The Weston Tolls/Route 128 area is a good location for a potential intercity rail station given the unique access afforded by two major Interstates. However, the recently completed Liberty Mutual campus makes development of a passenger rail station north of the Corridor not practical. South of the Corridor, the necessary environmental, political, and community requirements for developing on parkland make developing the Leo J. Martin Memorial Golf Course site unfeasible. Additionally, a new station at Framingham will serve a similar population (Boston's western suburbs) and utilize an existing station site rather than building a new station. The Framingham Station site provides access to major transportation links west of Boston, including Interstate 90, Route 9, and Route 30. Additionally, the Framingham sites provides better intermediate service between Boston and Worcester than a station closer to the urban core of Boston like Weston Tolls/Route 128. Thus, a new station and NNEIRI Corridor service to the Weston Tolls/Route 128 site is not recommended.

5.2.4.4 Framingham Station

The location and condition of Framingham makes it suited to serve as a Suburban Hub Station on the Corridor. The station is located near large highway and transit interchanges and provides regional access to outlying parts of the Boston metropolitan area, approximately 21 miles from Downtown Boston. The station is located near Framingham town center, with a significant cluster of residences, businesses, and Framingham State University, a significant employer and with a large student population.

5.2.4.5 Worcester Union Station

The size, location, and existing amenities of Union Station make it uniquely suited to serve as an Urban Hub Station site on the Corridor. Union Station is in close proximity to Worcester's business and government centers. Additionally, the station has existing AMTRAK waiting facilities, ticket counters, and connections to the MBTA's Commuter Rail system, local and intercity buses, near the center of a regional expressway network. The population density around Union Station also makes it a natural point to serve as an intercity station. The station requires few upgrades to accommodate NNEIRI service.

5.2.4.6 Palmer Station Site

The Palmer Station site requires further study to determine operational logistics at the site or if a new facility in a new location will be required. Given current track configuration, it is unclear if a station on the site of the historic station site is currently feasible. However, the population and commercial density surrounding the station are at a level that could and intermodal connections to Interstate 90 and local bus lines make the site attractive for intercity rail. Additionally, the station has the potential to serve populations between Worcester (40 miles east) and Springfield (15 miles west) as a Suburban Intermediate or Suburban Hub Station.

5.2.4.7 Springfield Union Station

The size, location, and existing amenities of Union Station make it well suited to serve as an Urban Hub Station site on the Corridor. The Station has existing AMTRAK waiting facilities, ticket counters, and connections to other AMTRAK services and intercity buses. Additionally, the station is center of a regional expressway network and near Downtown Springfield. The station is currently undergoing significant upgrades, which will improve passenger and operational qualities.

5.2.5 Holyoke Station Site

Holyoke Station's location provides an opportunity to serve communities in the central Pioneer Valley as an Urban Intermediate or Suburban Hub Station. Additionally, the station is located in Holyoke center and proximate to Interstate 91 and Route 5, providing regional connectivity. However, given the station's geographic proximity to Springfield (Union) Station, consideration should be given to the extent and frequency of service provided.

5.2.6 Northampton Station Site

Northampton Station's location provides an opportunity to serve communities in Hampshire, Franklin, Berkshire Counties and the adjoining colleges and universities as an Urban Intermediate Station. Additionally, the station is located in Northampton center, with bus connections, and proximate to Interstate 91 and Route 5, providing regional connectivity.

5.2.7 John W. Olver Station Site

The John W. Olver Transit Center's location provides an opportunity to serve communities in Franklin and northern Berkshire Counties as an Urban Intermediate Station. Additionally, the station is located near Greenfield center and proximate to Interstate 91 and Route 2, providing regional connectivity. However, given the station's geographic proximity to Northampton Station, consideration should be given to the extent and frequency of service provided.

5.2.8 Brattleboro Station

Brattleboro Station's location provides an opportunity to serve communities in southeast Vermont and southwest New Hampshire as an Urban Intermediate Station. Additionally, the station is located in Brattleboro center and proximate to Interstate 91, providing regional connectivity.

5.2.9 Bellows Falls Station

Bellows Falls is a small town center with a small business, government, and institutional presence. The station is proximate to Interstate 91 and could serve as a Rural Intermediate Station and provide connections to the surrounding region. However, given the station's geographic proximity to White River Junction and other larger stations, consideration should be given to the extent and frequency of service provided.

5.2.10 Claremont Station

Claremont Station's location provides an opportunity to serve the communities in western New Hampshire as a Rural Intermediate Station. Additionally, station is proximate to Claremont town center and Interstate 91, providing regional connectivity. However, the station is in an area with a relatively low population density, few adjacent institutions or businesses, and limited intermodal connections and, given the station's geographic proximity to White River Junction Station, consideration should be given to the extent and frequency of service provided..

5.2.11 Windsor Station

The station is proximate to Interstate 91 and could serve as a Rural Intermediate Station and provide connections to the surrounding region. However, given the station's geographic proximity to White River Junction Station, consideration should be given to the extent and frequency of service provided.

5.2.12 White River Junction Station

The size, location, and existing amenities of White River Junction make it uniquely suited to serve as an Urban Intermediate Station on the Corridor. The Station has existing AMTRAK waiting facilities and ticket counters and is located near a small downtown business district. Additionally, the station is near a large Interstate highway junction and in a region that includes large population, business, and institutions in both Vermont and New Hampshire.

5.2.13 Randolph Station

The station is proximate to Interstate 89 and could serve as a Rural Intermediate Station and provide connections to the surrounding region. However, given the station's geographic proximity to White River Junction Station, consideration should be given to the extent and frequency of service provided.

5.2.14 Montpelier Station

Montpelier Station is located in a suburban industrial area, a significant distance from Montpelier and does not have good transit or road connections to the region. However, given the significance of Montpelier to the State of Vermont and the ability of the station to serve the Barre area, the station could continue to serve as a Rural Intermediate Station stop in central Vermont, particularly if service at Waterbury is deemed unfeasible. Additionally, a shuttle or regional bus service would enable better connections central Montpelier with Vermont's state government offices and a cluster

of business, institutions, and government organizations. The station is located near several areas of tourist interest, including ski and summer resorts.

5.2.15 Waterbury Station

The size, location, and existing amenities of Waterbury make it potentially suited to serve as a Suburban or Rural Intermediate Station and hub for central Vermont rail service. The Station has existing waiting areas and a Green Mountain Coffee café and is located near a small downtown business district. The station is located near several areas of tourist interest, including ski and summer resorts. Additionally, the station is near the Interstate 89 and Vermont Route 100 junction, providing regional connectivity, and includes local bus service.

5.2.16 Burlington-Essex Junction Station

The location of Burlington (Essex Junction) makes it uniquely suited for NNEIRI service. The station is located east of Burlington, Vermont's largest city, with a significant cluster business, institutions, and government organizations in close proximity. Importantly, the station also serves as a hub for AMTRAK and local buses. The station is considered a Suburban Hub Station due to its proximity to its location east of Downtown Burlington and access to connecting intermodal transit.

5.2.17 St. Albans Station

St. Albans Station is the final station before the Canadian border and located in a significant town center and could serve as a Suburban or Rural Intermediate Station. However, given the station's geographic proximity to Burlington (Essex Junction) Station, consideration should be given to the extent and frequency of service provided. Further analysis is necessary to determine potential ridership at the station site and how the station will fit into the plan for the service.

5.2.18 St. Lambert Station

St. Lambert Station is not recommended as a site for NNEIRI service. The future U.S. Customs and Border Protection facility in Montreal (Central Station) will preclude additional Canadian station stops. Additionally, given the station's geographic proximity to Montreal (Central Station), the site might not be appropriate for intercity rail service, which stops at larger hub stations and makes less frequent stops than traditional regional rail service.

5.2.19 Montreal Central Station

The size, location, and existing amenities of Montreal's Central Station make it uniquely suited to serve as an Urban Hub Station and northern terminal of NNEIRI service. The station is located in Downtown Montreal, with a high density of residences, business, institutions, and government organizations in close proximity. Importantly, the station also serves as a hub for VIA Rail, commuter rail, rapid transit, and local buses. Additionally, Montreal's primary intercity bus terminal (Gare d'autocars de Montréal) is a short distance from the station and Montreal-Trudeau International Airport is connected by a free shuttle bus.

5.2.20 Windsor Locks Station

Windsor Locks Station's proximity to Bradley International Airport and Interstate 91 make it uniquely suited for NNEIRI service as a Suburban Hub Station. The station offers a free shuttle bus to Bradley International Airport, providing NNEIRI passengers easy access to national and international destinations. The station has an existing park and ride lot that will allow for commuters to easily access rail service. Additionally, Windsor Locks will continue to serve AMTRAK and will serve future commuter rail service. CTDOT's proposed rebuilding of Windsor Locks Station will enable the station to comply with NNEIRI design standards.

5.2.21 Windsor Station

Windsor Station could serve as a Suburban Hub station given its geographic location north of Hartford. However, given the station's geographic proximity to Hartford (Union) Station, consideration should be given to the extent and frequency of service provided.

5.2.22 Hartford Union Station

The size, location, and existing amenities of Hartford's Union Station make it uniquely suited to serve as an Urban Hub station on the Corridor. The station is located in Downtown Hartford, with a high density of business, institutions, and government organizations in close proximity. Importantly, the station also serves as a hub for AMTRAK, local buses, intercity buses, and future rapid transit and commuter rail service. Additionally, the population density around the station site provides a significant source of potential ridership for NNEIRI service.

5.2.23 Berlin Station

The location and condition of Berlin Station makes it well suited to serve as a Suburban Hub Station site on the Corridor, located near a large highway with existing AMTRAK and future commuter rail service. Additionally, the population density around Berlin Station provides a significant source of potential riders. The proposed CTDOT re-design of the station will significantly improve facilities at Berlin Station. However, given the station's geographic proximity to Hartford (Union) Station, consideration should be given to the extent and frequency of service provided.

5.2.24 Meriden Station

The location and condition of Meriden Station make it uniquely suited to serve as a station site on the Corridor. The station could serve as Urban Intermediate Station, located in a suburban town center with existing AMTRAK and future commuter rail service. Additionally, the population density around the station site provides a significant source of potential ridership for NNEIRI service. The proposed CTDOT re-design of the station will significantly improve facilities at Meriden Station.

5.2.25 Wallingford Station

The location and condition of Wallingford Station make it uniquely suited to serve as a station site on the Corridor. The station is an Urban Intermediate Station, located in a suburban town center with existing AMTRAK and future commuter rail service. However, given the station's geographic proximity to New Haven (Union) Station, consideration should be given to the extent and frequency of service provided. Additionally, the population density around the station site provides a significant

source of potential ridership for NNEIRI service. The proposed CTDOT re-design of the station will significantly improve facilities at Wallingford Station.

5.2.26 New Haven Union Station

The size, location, and existing amenities of New Haven's Union Station make it uniquely suited to serve as an Urban Hub station on the Corridor. The station is located near central New Haven, with a high density of business and institutions in close proximity. Importantly, the station also serves as a hub for AMTRAK, commuter rail, local buses, and intercity buses. Additionally, Union Station will connect NNEIRI service to the Northeast Corridor, allowing for trains to potentially continue south toward New York and Washington.